HALEY & ALDRICH, INC.
One Arizona Center
400 E. Van Buren St., Suite 545
Phoenix, AZ 85004
602.760.2450

Technical Memorandum

14 September 2018
File No. 129687-010

TO: Florence Copper Inc.
Ian Ream, Senior Hydrogeologist

FROM: Haley & Aldrich, Inc.
Lauren Candreva, R.G.

Subject: Drilling and Installation Summary
PTF Point-of-Compliance Well M52-UBF
Florence Copper Inc., Florence, Arizona

This document describes the drilling, installation, and testing of point-of-compliance (POC) well M52-UBF for Florence Copper Inc. (Florence Copper) in Florence, Arizona, including the equipment used to perform the work, completion, and the results of well testing activities. Separate well completion reports have been created for each Production Test Facility (PTF) well.

The Arizona Department of Water Resources Registry ID for well M52-UBF is 55-226788; the Well Registry Report is included in Appendix A. The well is located in the northeast quarter of the northeast quarter of the southeast quarter of Section 28 of Township 4 north, Range 9 East of the Gila and Salt River Baseline and Meridian (D(4-9)28DAA). The location of well M52-UBF is show on Figure 1.

BOREHOLE DRILLING AND LOGGING

Florence Copper contracted National Exploration, Wells, & Pumps (National) to drill, install, and test well M52-UBF in accordance with *Bid Specifications: Installation of Three POC Wells, Production Test Facility, Florence, Arizona* (Haley & Aldrich, 2015). A Schramm T685WS drilling rig was used for all drilling and construction activities. Haley & Aldrich provided intermittent oversight of drilling activities, geophysical logging, well installation, and testing. Brown and Caldwell also provided oversight for some of the well completion activities. All reported depths are in feet below ground surface unless otherwise noted.

A steel surface casing (nominal 14-inch diameter; 17.5-inch diameter borehole) with cement surface seal was installed to 40 feet on 25 January 2017. Type V neat cement was installed from total depth to ground surface using the submerged tremie method.

Borehole drilling (10⅝-inch diameter, mud-rotary drilling method) commenced on 26 January 2017 and was completed to a total depth of 280 feet on the same day. On 26 January 2017, Southwest Exploration Services, LLC completed the following downhole geophysical logs within the borehole (Figure 2; Appendix B):

- Specific potential;
- Natural gamma;
- Electrical resistivity;
- Fluid conductivity;
- Caliper;
- Temperature; and
- Sonic.

Geology

The borehole lithology was determined by inspecting drill cuttings as the borehole advanced and were refined based on the results of the geophysical surveys. The borehole penetrated and was terminated in the Upper Basin Fill Unit (UBFU). A lithologic log of the well M52-UBF borehole is provided in Appendix C.

WELL INSTALLATION AND DEVELOPMENT

Installation

The well was installed on 26 January 2017 and consists of 5-inch nominal diameter Schedule 80 polyvinyl chloride (PVC) casing and screen installed to 274 feet (Figure 3). The blank well casing extends to 198 feet and the screen extends from 198 to 274 feet. The bottom of the screen is closed with a PVC cap. During casing installation, 316 grade stainless steel centralizers were installed at approximately 60-foot intervals on both casing and screen sections. Pipe tally forms are included in Appendix D.

Annular materials were installed on 27 January 2017 using tremie pipe. Filter pack consisting of No. 8 to 12 US Mesh Colorado Silica Sand was installed from the total depth of the borehole (280 feet) to 197 feet. An interval of bentonite chips was installed from 197 to 187 feet. Cement-bentonite grout was installed using the submerged tremie method from 187 feet to the ground surface. Annular material forms are included in Appendix D.

Development

After demobilization of the drill rig, the well was initially developed by the airlift method, followed by pump development. Development activities were completed by National using a workover rig. On 27 January 2017, an airline was temporarily installed and airlift development of the well was conducted at approximately 1 to 2 gallons per minute (gpm) to purge drilling fluids and solids from the well. During

airlift development, the airlift pump was turned on and off to surge the well. Airlift development was conducted for approximately 3.5 hours.

To pump develop the well, a submersible pump was temporarily installed on 13 February 2017. The pump development was conducted at approximately 20 gpm; the submersible pump was periodically turned off to surge the well during development. The discharge was visually clear after approximately 1 hour of pump development; however, development was conducted for a total of 7 hours. The development was concluded on 14 February 2017, at which time the discharge was visibly clear with turbidity values less than 12 Nephelometric Turbidity Units. Well development forms are included in Appendix D.

In July 2017, the static depth to water at well M52-UBF was measured at 231.82 feet.

Well Completion

Upon completion, a locking, 14-inch diameter surface vault was installed in a concrete pad at the surface. A QED Environmental Systems Well Wizard® low-flow bladder pump was installed with a pump intake depth of 238 feet below the top of casing.

The surveyed location of well M52-UBF is:

Northing (feet)	Easting (feet)	Measuring Point Elevation (feet amsl)
774178.00	851092.00	1485.04

***Notes**:*

Northing and easting locations provided in State Plane North American Datum 1983, vertical location provided in North American Vertical Datum 1988.

amsl –feet above mean sea level

Ambient water quality sampling was conducted at the well. The water quality results and water level elevations measured are summarized in *Procedures for Determining Alert Levels and Aquifer Quality Limits for Groundwater Compliance Monitoring* (Brown and Caldwell, 2018).

REFERENCES

Brown and Caldwell, Inc., 2018. *Procedures for Determining Alert Levels and Aquifer Quality Limits for Groundwater Compliance Monitoring, Florence Copper Project, Florence, Arizona*. June.

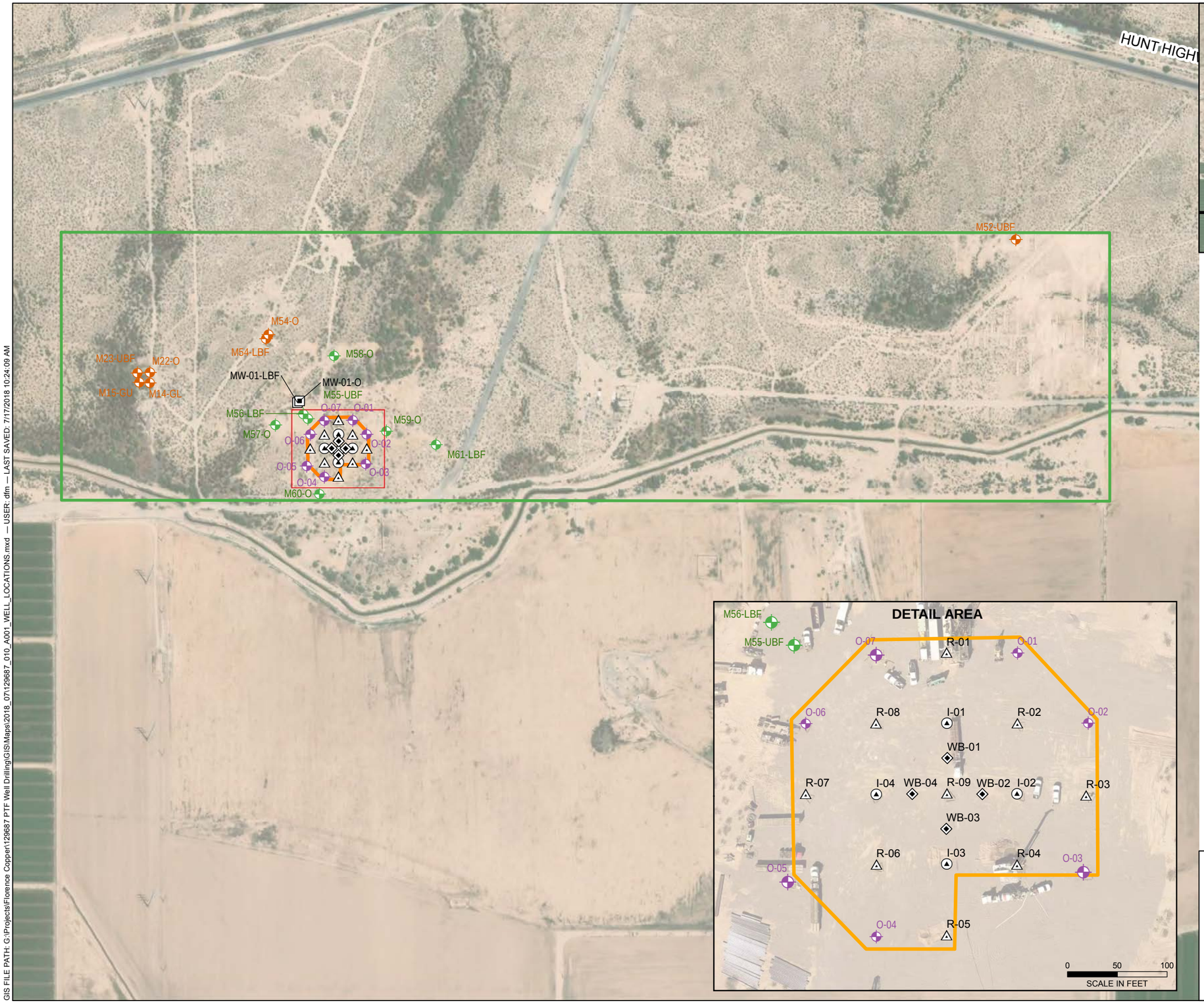
Haley & Aldrich, Inc., 2015. *Bid Specifications: Installation of Three POC Wells, Production Test Facility, Florence, Arizona*. June 2015 for Florence Copper Inc.

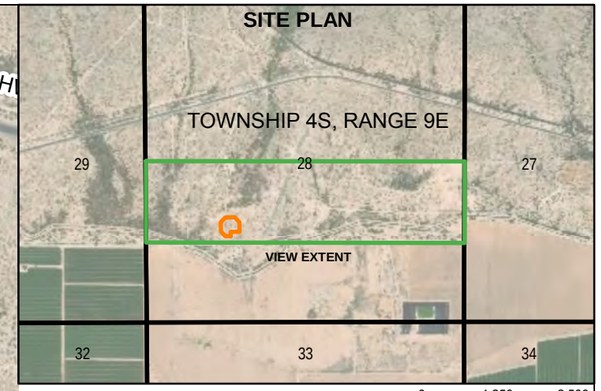
Enclosures:

- Figure 1 – Well Locations
- Figure 2 – M52-UBF Point-of-Compliance Well Geophysical Data and Lithologic Log
- Figure 3 – M52-UBF Point-of-Compliance Well As-Built Diagram
- Appendix A – Arizona Department of Water Resources Well Registry Report
- Appendix B – Geophysical Surveys
- Appendix C – Lithologic Log
- Appendix D – Well Completion Forms

\\haleyaldrich.com\share\phx_common\Projects\Florence Copper\129687 PTF Well Drilling\Deliverables\Well Summary Reports\M52-UBF\2018-0914_M52-UBF Well Install Comp Letter Report_F.docx

FIGURES





LEGEND

- OBSERVATION WELL
- SUPPLEMENTAL MONITORING WELL
- POINT-OF-COMPLIANCE WELL

PTF WELL

- INJECTION
- RECOVERY
- WESTBAY WELL
- OPERATIONAL MONITORING
- PTF WELL FIELD
- STATE LAND LEASE

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

0 500 1,000
SCALE IN FEET

HALEY ALDRICH

FLORENCE COPPER PROJECT
FLORENCE, ARIZONA

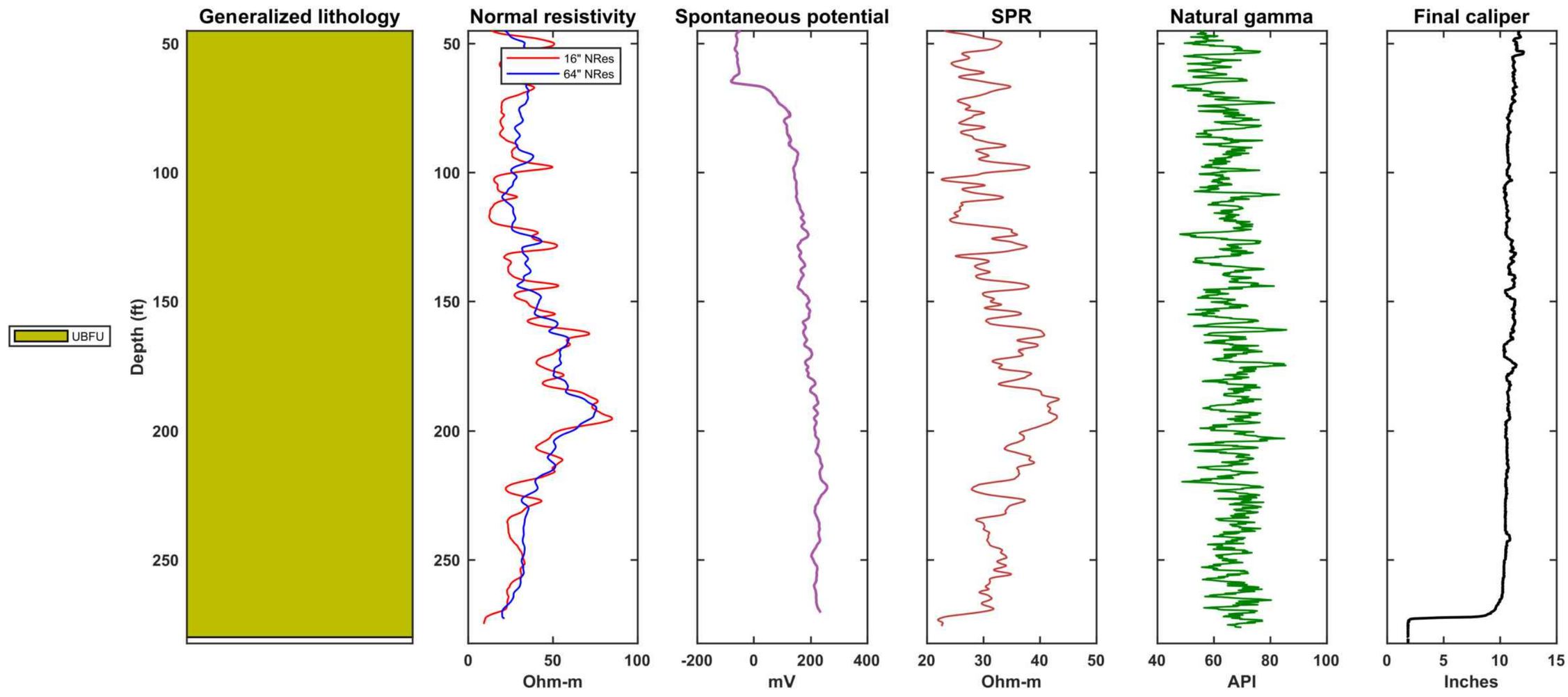
WELL LOCATIONS

FLORENCE COPPER INC.

AUGUST 2018

FIGURE 1

GIS FILE PATH: G:\Projects\Florence Copper\129687 PTF Well Drilling\GIS\Maps\2018_07\129687_010_A001_WELL_LOCATIONS.mxd — USER: dfm — LAST SAVED: 7/17/2018 10:24:09 AM



MCELENEY, TERRI Printed: 6/14/2018 3:33 PM Layout: M52UBF
G:\129687\GLOBAL\CAD\129687-010 GEOPHYICAL DATA 2018-0614.DWG

HALEY ALDRICH

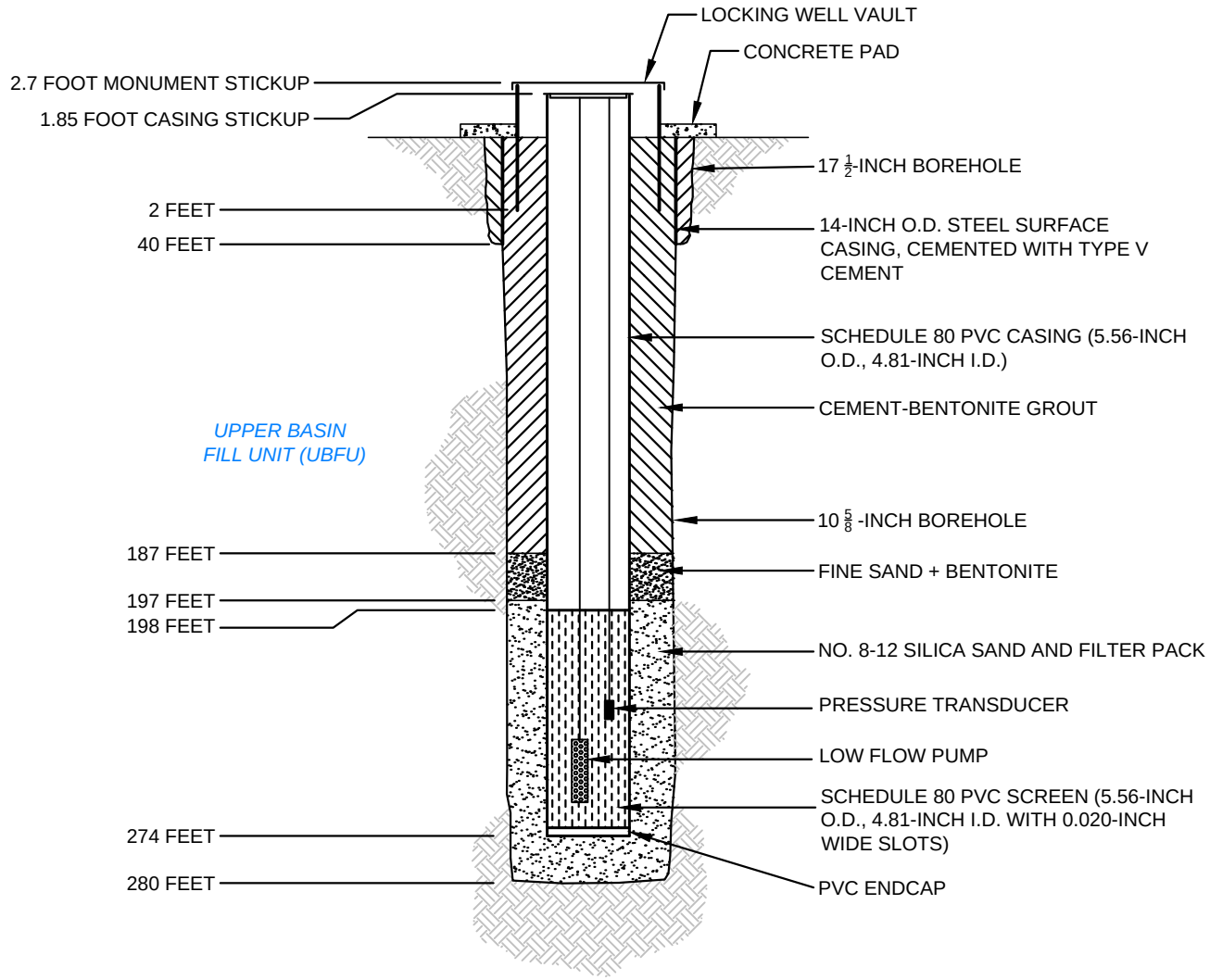
PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

M52-UBF POINT OF COMPLIANCE WELL GEOPHYSICAL DATA AND LITHOLOGIC LOG

FLORENCE COPPER

SCALE: AS SHOWN
SEPTEMBER 2018

FIGURE 2



NOTES

1. WELL REGISTRATION NO.: 55-226788
2. CADASTRAL LOCATION: D (4-9) 28 DAA
3. TOP OF CASING ELEVATION: 1485.04' AMSL
4. CONCRETE PAD ELEVATION: 1483.43' AMSL
5. I.D. = INSIDE DIAMETER
6. O.D. = OUTSIDE DIAMETER
7. PVC = POLYVINYL CHLORIDE

HALEY ALDRICH

PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

M52-UBF
POINT-OF-COMPLIANCE WELL
AS-BUILT DIAGRAM

FLORENCE COPPER INC.

SCALE: NOT TO SCALE
SEPTEMBER 2018

FIGURE 3

APPENDIX A

Arizona Department of Water Resources Well Registry Report

Arizona Department of Water Resources
Water Management Division
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8627 • (602) 771-8690 fax
· www.azwater.gov ·

RECEIVED
FEB 14 2017
ADWR

Well Driller Report and Well Log

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK.

FILE NUMBER: D(4-9)28 BDD
WELL REGISTRATION NUMBER: **55 -** 226788
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

Mail To:

NAME: National EWP
DWR LICENSE NUMBER: 823
ADDRESS: 1200 west San Pedro Street
TELEPHONE NUMBER: 480-558-3500
CITY / STATE / ZIP: Gilbert, AZ, 85233
FAX:

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Florence Copper, INC
MAILING ADDRESS: 1575 W.Hunt HWY
CITY / STATE / ZIP CODE: Florence, AZ, 85132
CONTACT PERSON NAME AND TITLE: Ian Ream, Senior Hydraulogist
TELEPHONE NUMBER: 520 374 3984
FAX:
WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.): M52-UBF

Location of Well

WELL LOCATION ADDRESS (IF ANY): Same as well owner

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0 S	9.0 E	28	NE ¼	NE ¼	SE ¼

LATITUDE			LONGITUDE		
33 ° Degrees	3 ' Minutes	10 "N Seconds	111 ° Degrees	25 ' Minutes	24 "W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)
☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: 1496 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE)
☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*GEOGRAPHIC COORDINATE DATUM (CHECK ONE)
☒ NAD-83 ☒ Other (*please specify*): NAD 27

COUNTY: Pinal

ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
200	31	054A

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ALL THAT APPLY
☐ Air Rotary
☐ Bored or Augered
☐ Cable Tool
☐ Dual Rotary
☒ Mud Rotary
☐ Reverse Circulation
☐ Driven
☐ Jetted
☐ Air Percussion / Odex Tubing
☐ Other *(please specify):*

Method of Well Development

CHECK ALL THAT APPLY
☒ Airlift
☐ Bail
☐ Surge Block
☐ Surge Pump
☐ Other *(please specify):*

Method of Sealing at Reduction Points

CHECK ONE
☒ None
☐ Packed
☐ Swedged
☐ Welded
☐ Other *(please specify):*

Condition of Well

CHECK ONE
☒ Capped
☐ Pump Installed

Construction Dates

DATE WELL CONSTRUCTION STARTED: 1-15-16
DATE WELL CONSTRUCTION COMPLETED: 2-3-16

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY:
DATE: 2-9-17

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 224654

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Depth

DEPTH OF BORING	DEPTH OF COMPLETED WELL
280 Feet Below Land Surface	275 Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
235 Feet Below Land Surface	2-4-17	10:30 am	☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	40	17.5
40	280	10.625

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
+1	40	14	X										
+2	200	5.5		X			X						
200	275	5.5		X							X		.060

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	190				X							
190	195						X		Pell Plug			1/4
195	275										X	8-12

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 -

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE		Description	Check (T) every interval where water was encountered (if known)
FROM (feet)	TO (feet)	Describe material, grain size, color, etc.	
0	20	Unconsolidated alluvial overburden, cobbles at 20'	
20	60	Silty sand	
60	155	Silty sand with gravels	
155	180	Poorly graded sand with silt and gravel	
180	205	Silty sand with gravel	
205	240	Poorly graded sand with silt and gravel	
240	275	Poorly graded sand with gravel	
275	280	Sandy lean clay	

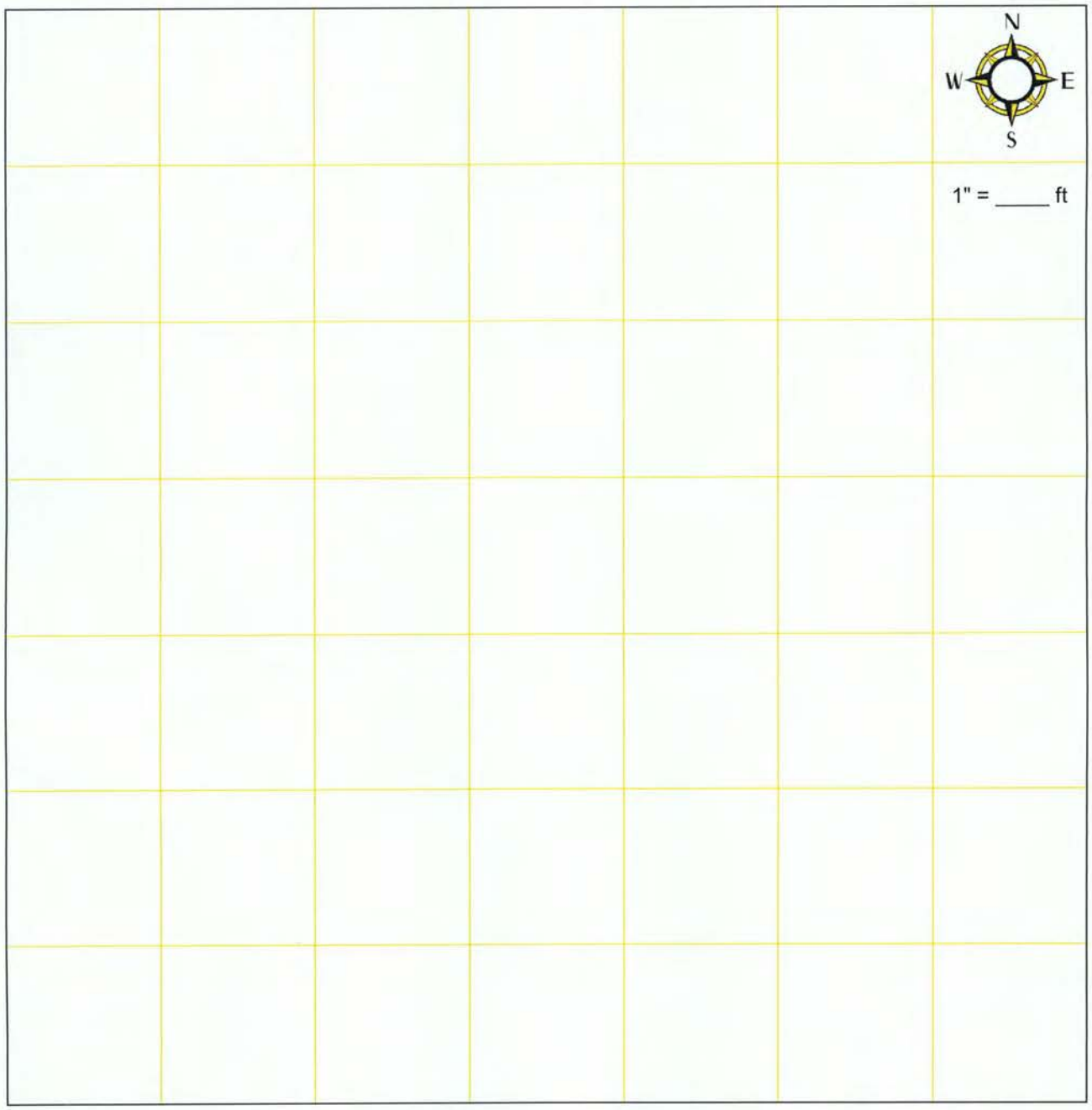
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 226788

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
Resolution Copper	BOOK 0	MAP 0	PARCEL 0

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



Run Date: 01/13/2017

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location D 4.0 9.0 28 D A A

Well Reg.No 55 - 226788

AMA PINAL AMA

Registered Name FLORENCE COPPER, INC.
1575 W. HUNT HWY
FLORENCE AZ 85132

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 01/11/2017

Owner OWNER
Driller No. 823
Driller Name NATIONAL EWP, INC.
Driller Phone 480-558-3500
County PINAL
Intended Capacity GPM 0.00

Well Type ENV - MONITOR
SubBasin ELOY
Watershed UPPER GILA RIVER
Registered Water Uses MONITORING
Registered Well Uses MONITOR
Discharge Method NO DISCHARGE METHOD LISTED
Power NO POWER CODE LISTED

Well Depth	0.00	**Case Diam**	0.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	0.00	**CRT**	
Draw Down	0.00	**Water Level**	0.00	**Log**	
		Acres Irrig	0.00	**Finish**	NO CASING CODE LISTED

Contamination Site: NO - NOT IN ANY REMEDIAL ACTION SITE

Tribe: Not in a tribal zone

Comments Well M52-UBF
Landownership: AZ State Land Dept. (Mineral Lease #11-026500)
TV

Current Action

1/13/2017 555 DRILLER & OWNER PACKETS MAILED
Action Comment: TNV

Action History

1/13/2017 550 DRILLING AUTHORITY ISSUED
Action Comment: TNV

1/11/2017 155 NOI RECEIVED FOR A NEW NON-PRODUCTION WELL
Action Comment: TNV

ARIZONA DEPARTMENT OF WATER RESOURCES

1110 W. Washington St. Suite 310
Phoenix, Arizona 85007

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-226788**

AUTHORIZED DRILLER: **NATIONAL EWP, INC.** LICENSE NO: **823**

NOTICE OF INTENTION TO DRILL ENV - MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **FLORENCE COPPER, INC. 1575 W. HUNT HWY FLORENCE, AZ, 85132**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

NE 1/4 of the **NE** 1/4 of the **SE** 1/4 Section **28** Township **4.0** **SOUTH** Range **9.0** **EAST**

NO. OF WELLS IN THIS PROJECT: **1**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **January 11, 2018**

Stella Murillo

GROUNDWATER PERMITTING AND WELLS

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St. Suite 310
Phoenix, AZ 85007
602-771-8500
azwater.gov

January 13, 2017

FLORENCE COPPER, INC.
1575 W. HUNT HWY
FLORENCE, AZ 85132

DOUGLAS A. DUCEY
Governor

THOMAS BUSCHATZKE
Director

Registration No. 55- 226788
File Number: D(4-9) 28 DAA

Dear Well Applicant:

Enclosed is a copy of the Notice of Intention to Drill (NOI) a well which you or your driller recently filed with the Department of Water Resources. This letter is to inform you that the Department has approved the NOI and has mailed, or made available for download, a drilling authorization card to your designated well drilling contractor. The driller may not begin drilling until he/she has received the authorization, and must keep it in their possession at the well site during drilling. Although the issuance of this drill card authorizes you to drill the proposed well under state law, the drilling of the well may be subject to restrictions or regulations imposed by other entities.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, a new NOI must be filed and authorization from this Department received before proceeding with drilling. If the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed by your driller [as required by A.A.C. R12-15-816(F)].

If you change drillers, you must notify the Department of the new driller's identity on a Request to Change Well Information (form 55-71A). Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he/she receives a new drilling authorization card from the Department.

If you find it necessary to change the location of the proposed well(s), you may not proceed with drilling until you file an amended NOI with the Department. An amended drilling authorization card will then be issued to the well drilling contractor, which must be in their possession before drilling begins.

Arizona statute [A.R.S. § 45-600] requires registered well owners to file a Pump Installation Completion Report (form 55-56) with the Department within 30 days after the installation of pumping equipment, if authorized. A blank report is enclosed for your convenience. State statute also requires the driller to file a complete and accurate Well Drillers Report and Well Log (form 55-55) within 30 days after completion of drilling. A blank report form was provided to your driller with the drilling authorization card. You should insist and ensure that all of the required reports are accurately completed and timely filed with the Department.

Please be advised that Arizona statute [A.R.S. § 45-593(C)] requires a registered well owner to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (form 55-71A) that may be downloaded from the ADWR Internet website at www.azwater.gov.

Sincerely,

Groundwater Permitting and Wells Section

1st

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8500 • (602) 771-8690
· www.azwater.gov ·

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

$150 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - $150 check or money order for the filing fee.
  - Well construction diagram, labeling all specifications listed in Section 6 and Section 7.

  Authority for fee: A.R.S. § 45-596 and A.A.C. R12-15-104.

AMA / INA	B SB
Pinal	BEN 11
RECEIVED DATE	WS
1/11/2017	08 UGR
ISSUED DATE	REMEDIAL ACTION SITE
1/13/2017	000

FILE NUMBER: D(4-9)28 DAA
WELL REGISTRATION NUMBER: 55 - 226788

SECTION 1. REGISTRY INFORMATION

To determine the location of well, please refer to the Well Registry Map (https://gisweb.azwater.gov/WellRegistry/Default.aspx) and/or Google Earth (http://www.earthpoint.us/Townships.aspx)

Well Type

CHECK ONE
- [x] Monitor
- [ ] Piezometer
- [ ] Vadose Zone
- [ ] Air Sparging
- [ ] Soil Vapor Extraction
- [ ] Other (*please specify*):

Proposed Action

CHECK ONE
- [x] Drill New Well
- [ ] Deepen
- [ ] Modify

WELL REGISTRATION NUMBER (*if Deepening or Modifying*): 55 -

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP(N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0 S	9.0 E	28	SE ¼	NE ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
		1001

COUNTY WHERE WELL IS LOCATED: PINAL

SECTION 2. OWNER INFORMATION

Land Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: AZ State Land Dept (Mineral Lease # 11-026500)
MAILING ADDRESS: 1616 W Adams St
CITY / STATE / ZIP CODE: Phoenix, AZ 85007
CONTACT PERSON NAME AND TITLE: Lisa Atkins, State Land Commissioner
TELEPHONE NUMBER: (602) 542-4631
FAX:

Well Owner (*check this box if Land Owner and Well Owner are same* ☐)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: Florence Copper, Inc.
MAILING ADDRESS: 1575 W Hunt Hwy
CITY / STATE / ZIP CODE: Florence, AZ 85132
CONTACT PERSON NAME AND TITLE: Ian Ream, Senior Hydrogeologist
TELEPHONE NUMBER: (520) 374-3984
FAX: (520) 374-3999

RECEIVED ADWR JAN 11 2017 ADWR

SECTION 3. DRILLING AUTHORIZATION

Drilling Firm

NAME: National EWP
DWR LICENSE NUMBER: 823
ROC LICENSE CATEGORY: A-4
TELEPHONE NUMBER: (480) 558-3500
FAX: 480-558-3525
EMAIL ADDRESS: jstephens@nationalewp.com

Consultant (*if applicable*)

CONSULTING FIRM: Haley & Aldrich, Inc.
CONTACT PERSON NAME: Mark Nicholls
TELEPHONE NUMBER: 602-760-2423
FAX: 602-760-2448
EMAIL ADDRESS: mnicholls@haleyaldrich.com

SECTION 4.

Questions	Yes	No	Explanation:
1. Are all annular spaces between the casing(s) and the borehole for the placement of grout at least 2 inches?	☒	☐	2-inch annular spaces are special standards required for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
2. Is the screened or perforated interval of casing greater than 100 feet in length?	☐	☒	100-foot maximum screen intervals are a special standard for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
3. Are you requesting a variance to use thermoplastic casing in lieu of steel casing in the surface seal?	☐	☒	The wells must be constructed in a vault. Pursuant to A.A.C. R12-15-801 (27) a "vault" is defined as a tamper-resistant watertight structure used to complete a well below the land surface.
4. Is there another well name or identification number associated with this well? (e.g., MW-1, PZ2, 06-04, etc.)	☒	☐	If yes, please state: M52-UBF
5. Have construction plans been coordinated with the Arizona Department of Environmental Quality?	☒	☐	If yes, please state agency contact & phone number: David Haag, 602-771-4669
6. For monitor wells, is dedicated pump equipment to be installed?	☒	☐	If yes, please state design pump capacity (*Gallons per Minute*): Low-flow
7. Is this well a new well located in an Active Management Area AND Intended to pump water for the purpose of remediating groundwater?	☐	☒	You must also file a supplemental form A.R.S. § 45-454(c) & (f) unless the well is a replacement well and the total number of operable wells on the site is not increasing. (*See instructions*)
8. Will the well registration number be stamped on the vault cover or on the upper part of the casing?	☒	☐	If no, where will the registration number be placed?

RECEIVED JAN 11 2017 ADWR

RECEIVED JAN 11 2017 ADWR

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER
55 - 226788

SECTION 6. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE

- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (*please specify*):

DATE CONSTRUCTION TO BEGIN
01/16/2017

Method of Well Development

CHECK ONE

- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other (*please specify*).

Method of Sealing at Reduction Points

CHECK ONE

- ☒ None
- ☐ Welded
- ☐ Swedged
- ☐ Packed
- ☐ Other (*please specify*):

Grout Emplacement Method

CHECK ONE

- ☒ Tremie Pumped *(Recommended)*
- ☐ Gravity
- ☐ Pressure Grout
- ☐ Other (*please specify*):

Surface or Conductor Casing

CHECK ONE

- ☐ Flush Mount in a vault
- ☒ Extends at least 1' above grade

SECTION 7. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

Attach a well construction diagram labeling all specifications below.

Borehole / Casing

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Casing: DEPTH FROM SURFACE FROM (feet)	Casing: DEPTH FROM SURFACE TO (feet)	Casing: OUTER DIAMETER (inches)	MATERIAL TYPE (T): STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T): BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	20	0	20	14	☒	☐	☐		☒	☐	☐	☐	☐		
20	276	10.5	0	200	5	☐	☒	☐		☒	☐	☐	☐	☐		
			200	275	5	☐	☒	☐		☐	☐	☐	☐	☒		0.020

Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	GRAVEL	SIZE
0	20			X								
20	190	☐	☐	☐	☒	☐	☐	☐		☐	☐	
190	195	☐	☐	☐	☐	☐	☒	☐		☐	☐	
195	276	☐	☐	☐	☐	☐	☐	☐		☒	☐	No. 8-12

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS:

EXPECTED DEPTH TO WATER *(Feet Below Ground Surface)*: 210

SECTION 8. PERMISSION TO ACCESS

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 9. LAND OWNER AND WELL OWNER SIGNATURE

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and

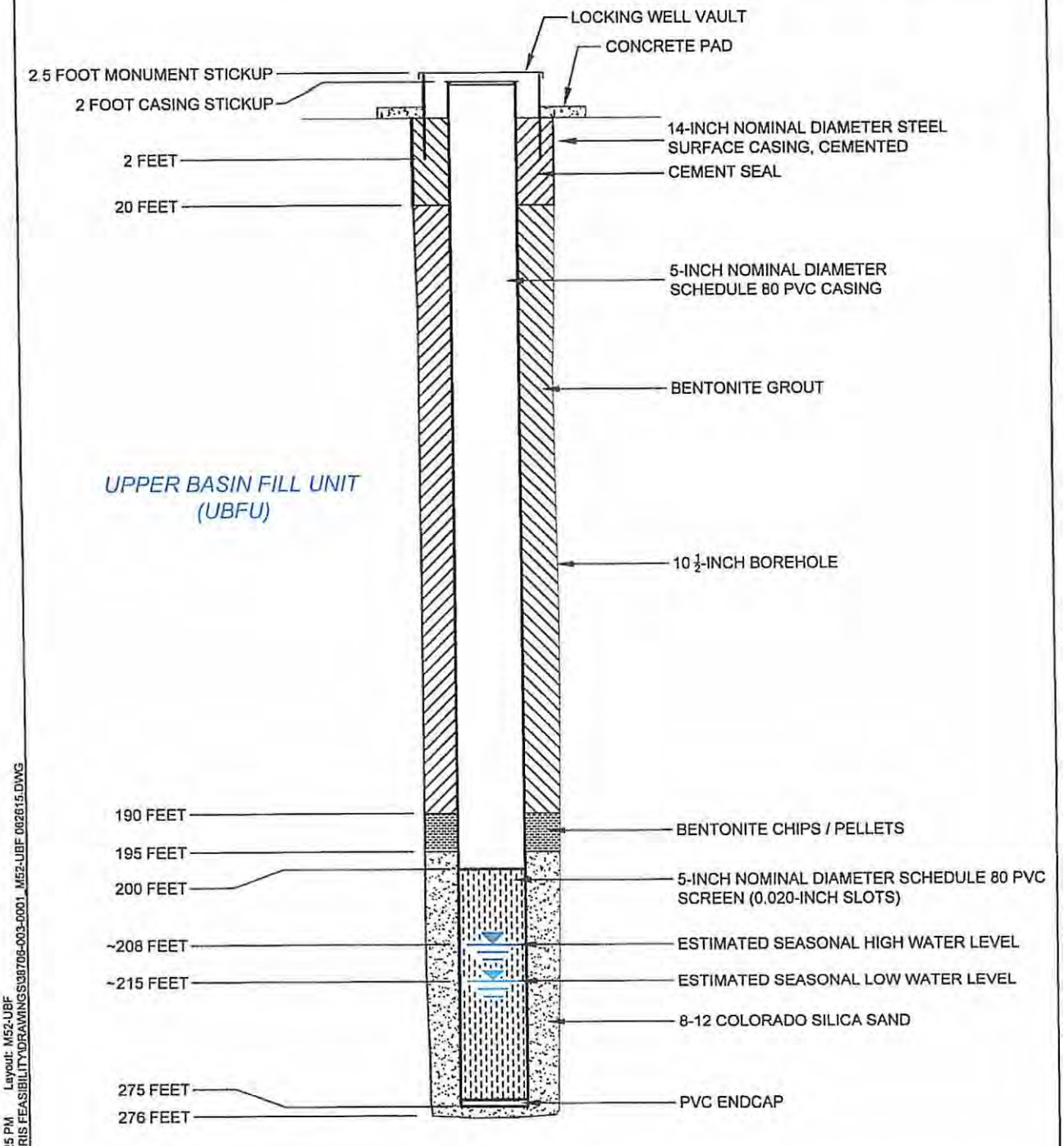
Land Owner	Well Owner *(if different from Land Owner; See instructions)*
PRINT NAME AND TITLE	PRINT NAME AND TITLE: Ian Ream, Senior Hydrogeologist
SIGNATURE OF LAND OWNER	SIGNATURE OF WELL OWNER: [signature]
DATE	DATE: Jan 9, 2017
☐ By checking this box, you agree to allow ADWR to contact you via electronic mail.	☒ By checking this box, you agree to allow ADWR to contact you via electronic mail.
EMAIL ADDRESS	EMAIL ADDRESS: IanReam@florencecopper.com

SECTION 5. Well Construction Diagram

Provide a well construction diagram showing all existing well construction features listed in Section 6 and Section 7.

See attached well diagram.

55-226788



HALEY ALDRICH

FLORENCE COPPER, INC.
FLORENCE, ARIZONA

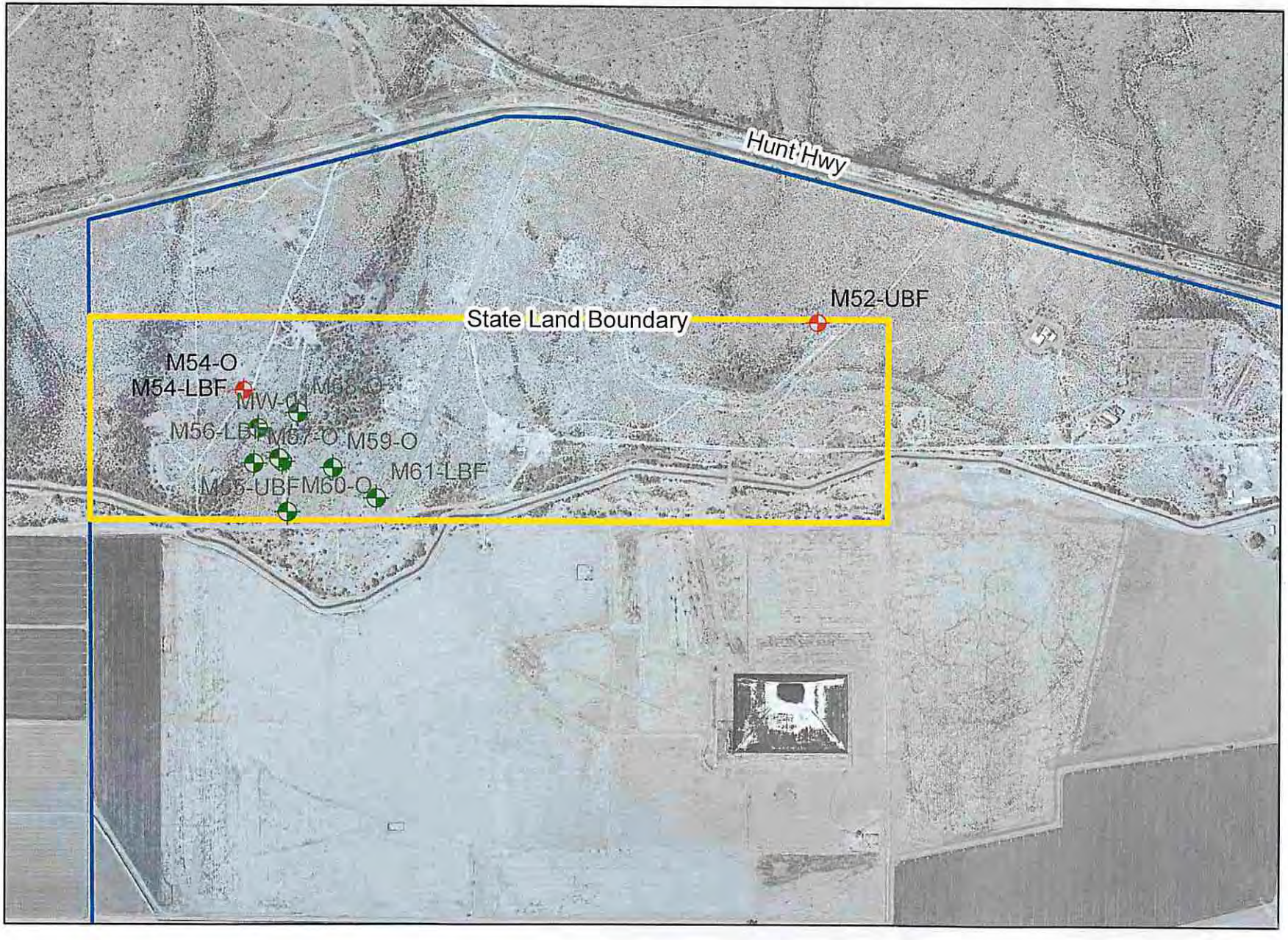
M52-UBF
WELL CONSTRUCTION DIAGRAM

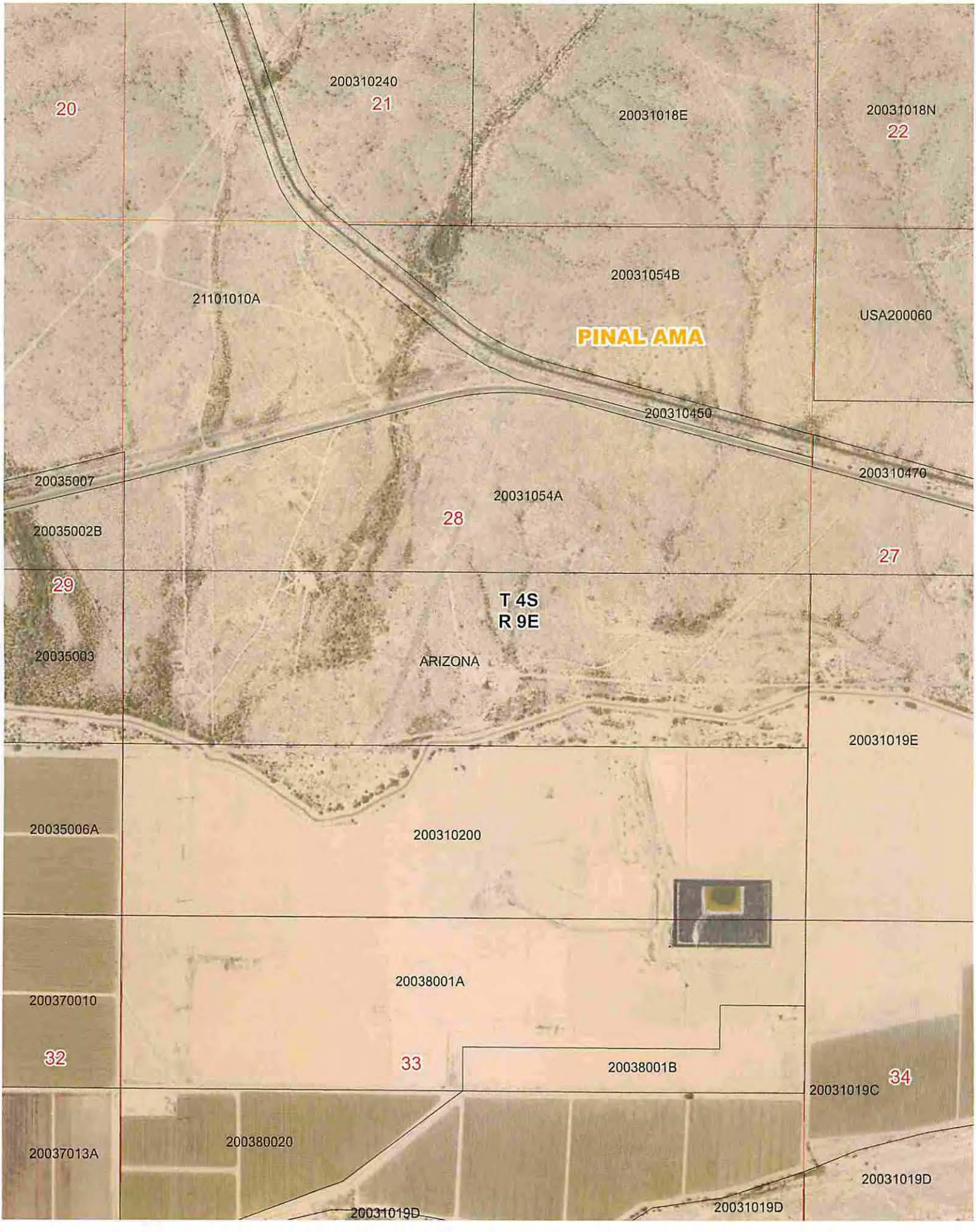
FLORENCE COPPER INC.

SCALE: NOT TO SCALE

FIGURE 1

MOBINI, GITA
Printed: 8/26/2015 2:25 PM Layout: M52-UBF
G:\PROJECTS\CURIS RESOURCES\38706-CURIS FEASIBILITY\DRAWINGS\38706-003-0001_M52-UBF 082615.DWG


Hunt Hwy
State Land Boundary
M52-UBF
M54-O
M54-LBF
MW-01
M56-LBF
M57-O
M59-O
M61-LBF
M60-O


200310240
20
21
20031018E
20031018N
22
20031054B
21101010A
USA200060
PINAL AMA
200310450
200310470
20035007
20031054A
20035002B
28
27
29
T 4S
R 9E
20035003
ARIZONA
20031019E
20035006A
200310200
20038001A
200370010
32
33
20038001B
34
20031019C
20037013A
200380020
20031019D
20031019D
20031019D

Torren Valdez

From: Ian Ream <IanReam@florencecopper.com>
Sent: Friday, January 13, 2017 9:06 AM
To: Torren Valdez
Subject: Re: Map of monitor well locations

Hi Torren,

The pumps will be QED micro purge. They typically do a liter or two a minute. Very low flow. Looking for discreet interval samples. The flow rate is based on drawdown. The goal is not to draw down the well much more than a half a foot or 1 foot.

Thanks,

Ian Ream
Senior Hydrogeologist
Florence Copper

On Jan 13, 2017, at 8:56 AM, Torren Valdez <tvaldez@azwater.gov> wrote:

> Ian,
>
> Would you happen to know the pump capacity (gpm) for the low-flow pumps that will be installed on those monitoring wells?
>
> Thank you,
>
> **Torren Valdez**
> Water Planning & Permitting Division
> Arizona Department of Water Resources
> 602.771.8614
>
> <image002.jpg>
>
> ---
>
> **From:** Ian Ream [mailto:IanReam@florencecopper.com]
> **Sent:** Thursday, January 12, 2017 11:13 AM
> **To:** Torren Valdez <tvaldez@azwater.gov>
> **Subject:** Map of monitor well locations
>
> Hi Torren,
>
> Here is a map with the well locations.
>
> Please don't hesitate to contact me if you need anything else or have any questions.
>
> Cheers,
>
> Ian

Ian Ream Senior Hydrogeologist

<image003.jpg>

Florence Copper Inc.
1575 W. Hunt Highway Florence AZ USA 85132
C 520-840-9604 T 520-374-3984 F 520-374-3999
E ianream@florencecopper.com Web florencecopper.com

"Notice Regarding Transmission

This message is intended only for the person(s) to whom it is addressed and may contain information that is privileged and confidential. If you are not the intended recipient, you are hereby notified that any dissemination or copying of this communication is prohibited. Please notify us of the error in communication by telephone (778-373-4533) or by return e-mail and destroy all copies of this communication. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of Taseko Mines Limited or any affiliated or associated company. The recipient should check this email and any attachments for the presence of viruses. Neither Taseko Mines Limited nor any affiliated or associated company accepts any liability for any damage caused by any virus transmitted by this email. Thank you."

NOTICE

A.R.S. § 41-1030(B), (D), (E) and (F) provide as follows:

B. An agency shall not base a licensing decision in whole or in part on a licensing requirement or condition that is not specifically authorized by statute, rule or state tribal gaming compact. A general grant of authority in statute does not constitute a basis for imposing a licensing requirement or condition unless a rule is made pursuant to that general grant of authority that specifically authorizes the requirement or condition.

D. This section may be enforced in a private civil action and relief may be awarded against the state. The court may award reasonable attorney fees, damages and all fees associated with the license application to a party that prevails in an action against the state for a violation of this section.

E. A state employee may not intentionally or knowingly violate this section. A violation of this section is cause for disciplinary action or dismissal pursuant to the agency's adopted personnel policy.

F. This section does not abrogate the immunity provided by section 12-820.01 or 12-820.02.

ARIZONA DEPARTMENTof WATER RESOURCES
1110 W. Washington St. Suite 310
Engineering and Permits Division
Phoenix, AZ 85007
602-771-8500

NOTICE TO WELL DRILLERS

This is a reminder that a valid drill card be present for the drilling of each and every well constructed on a site.* The problem seems to occur during the construction of a well when an unexpected problem occurs. Either the hole collapses, the hole is dry, a drill bit is lost and can't be recovered, or any number of other situations where the driller feels that he needs to move over and start another well. If you encounter this type of scenario, please be aware drillers do not have the authority to start another well without first obtaining drilling authority for the new well. Please note the following statutes and regulations pertaining to well drilling and construction:

ARIZONA REVISED STATUTE (A.R.S.)

A.R.S. § 45-592.A.

A person may construct, replace or deepen a well in this state only pursuant to this article and section 45-834.01. The drilling of a well may not begin until all requirements of this article and section 45-834.01, as applicable, are met.

***

A.R.S. § 594.A.

The director shall adopt rules establishing construction standards for new wells and replacement wells, the deepening and abandonment of existing wells and the capping of open wells.

***

A.R.S. § 600.A

A well driller shall maintain a complete and accurate log of each well drilled.

ARIZONA ADMINISTRATIVE CODE (A.A.C.)

A.A.C. R12-15-803.A.

A person shall not drill or abandon a well, or cause a well to be drilled or abandoned, in a manner which is not in compliance with A.R.S. Title 45, Chapter 2, Article 10, and the rules adopted thereunder.

***

A.A.C. R12-15-810.A.

A well drilling contractor or single well licensee may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

***

A.A.C. R12-15-816.F.

In the course of drilling a new well, the well may be abandoned without first filing a notice of intent to abandon and without an abandonment card.

*** THIS REQUIREMENT DOES NOT PERTAIN TO THE DRILLING OF MINERAL EXPLORATION, GEOTECHNICAL OR HEAT PUMP BOREHOLES**

Transaction Receipt - Success

Arizona Water Resources
Arizona Water Resources
MID:347501639533
1700 W Washington St
Phoenix , AZ 85012
602-771-8454

01/11/2017 04:20PM
Remittance ID
Arizona011117181536095Ald
Transaction ID:
178069995

KELSEY SHERRARD
500 Maint St
WOODLAND, California 95695
United States
Visa - 3420
Approval Code: 040691

Sale
Amount: $1,800.00

55-226788, 55-226789, 55-226790, 55-226791, 55-226792, 55-226793, 55-226794, 55-226795, 55-226796, 55-226797, 55-226798, 55-226799
N/A
Cash Reciepts
0
palder@azwater.gov

Cardmember acknowledges receipt of goods and/or services in the amount of the total shown hereon and agrees to perform the obligations set forth by the cardmember's agreement with the issuer.

Signature Phone Order

click here to continue.

Printed: 1/11/2017 4:27:39 PM

Arizona Department of Water Resources

1110 West Washington Street, Suite 310
Phoenix AZ 85007

Customer:
KELSEY SHERRARD
500 MAIN STREET
WOODLAND, CA 95695

Receipt #: 17-49315
Office: MAIN OFFICE
Receipt Date: 01/11/2017
Sale Type: Mail
Cashier: WRPXA

Item No.	Function Code	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
8505	122221	4439-6F	MONITOR, PIEZOMETER, AIR SPARGING, SOIL VAPOR EXTR		12	150.00	1,800.00
						RECEIPT TOTAL:	**1,800.00**

Payment type: CREDIT CARD
Amount Paid: $1,800.00
Payment Received Date: 01/11/2017

Authorization 178069995

Notes: Credit card payment for $1,800.00 is for well registration numbers 55-226788, 55-226789, 55-226790, 55-226791, 55-226792, 55-226793, 55-226794, 55-226795, 55-226796, 55-226797, 55-226798, 55-226799

No refund without valid receipt

APPENDIX B

Geophysical Surveys

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M52UBF
FIELD	FLORENCE COPPER
COUNTY	PINAL
STATE	ARIZONA

TYPE OF LOGS: E-LOGS
MORE: NAT. GAMMA
LOCATION
SEC TWP RGE

OTHER SERVICES
3-ARM CALIPER
TEMPERATURE
FLUID RESISTIVITY
SONIC

PERMANENT DATUM	ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL	G.L.

DATE	1-26-17	TYPE FLUID IN HOLE	MUD
RUN No	2	MUD WEIGHT	N/A
TYPE LOG	E-LOGS - NAT. GAMMA	VISCOSITY	N/A
DEPTH-DRILLER	279 FT.	LEVEL	FULL
DEPTH-LOGGER	275 FT.	MAX. REC. TEMP.	28.10 DEG. C
BTM LOGGED INTERVAL	275 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	A. OLSON / E. TURNER	TOOL STRING/SN	MSI E-LOG 40GRP SN 5514
WITNESSED BY	IAN - FLORENCE COPPER	LOG TIME:ON SITE/OFF SITE	7:30 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	10 5/8 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	1-26-17	**Date**	1-26-17	**Date**	1-26-17		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	MSI 60MM SONIC		
Tool SN	4183	**Tool SN**	5514	**Tool SN**	5001		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	275 FT.	**To**	275 FT.	**To**	275 FT.		
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON		
Truck No	900	**Truck No**	900	**Truck No**	900		
Operation Check	1-25-17	**Operation Check**	1-25-17	**Operation Check**	1-25-17		
Calibration Check	1-25-17	**Calibration Check**	1-25-17	**Calibration Check**	N/A		
Time Logged	7:45 P.M.	**Time Logged**	8:10 P.M.	**Time Logged**	8:35 P.M.		
Date		**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model		**Tool Model**		**Tool Model**			
Tool SN		**Tool SN**		**Tool SN**			
From		**From**		**From**			
To		**To**		**To**			
Recorded By		**Recorded By**		**Recorded By**			
Truck No		**Truck No**		**Truck No**			
Operation Check		**Operation Check**		**Operation Check**			
Calibration Check		**Calibration Check**		**Calibration Check**			
Time Logged		**Time Logged**		**Time Logged**			

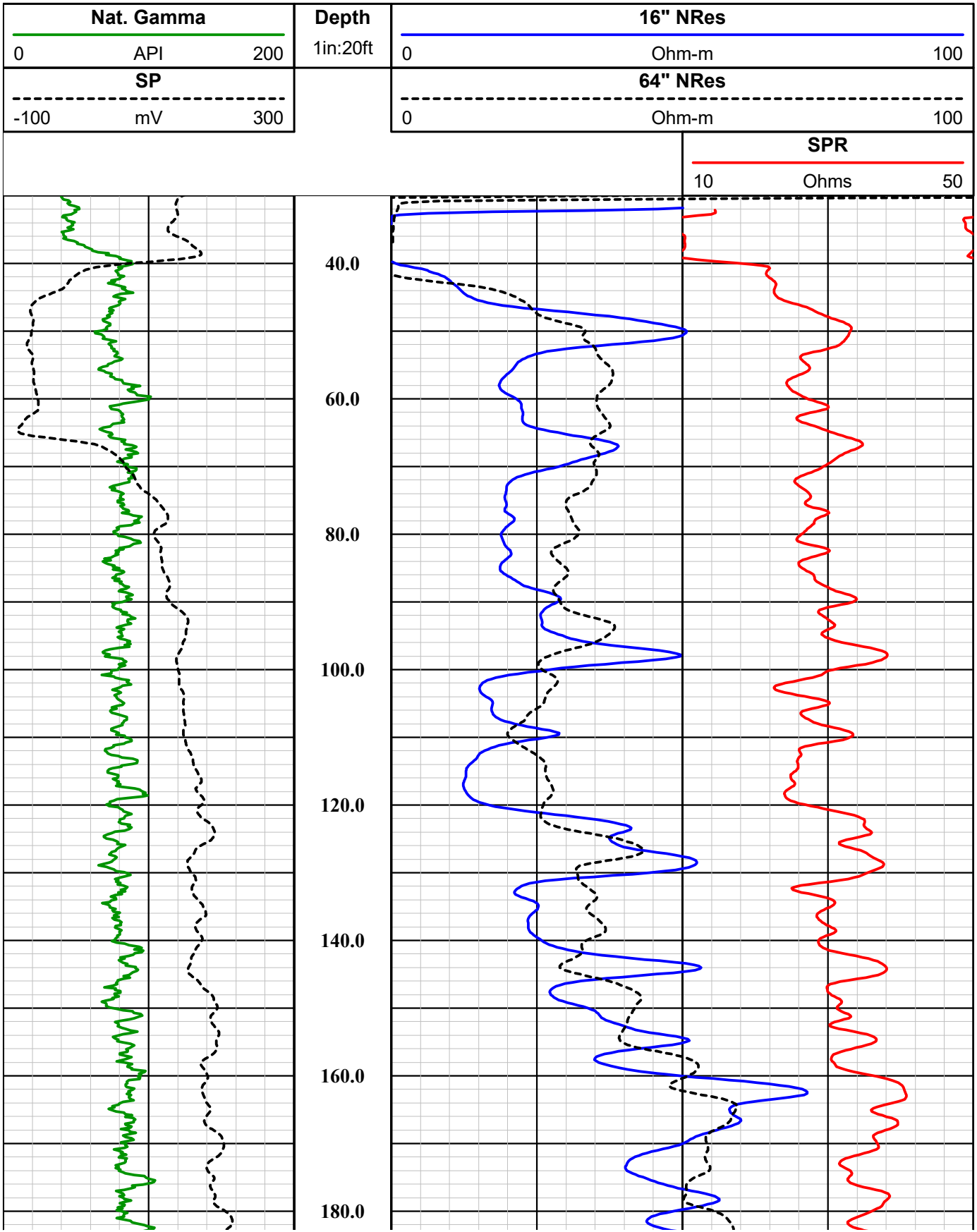
Additional Comments:

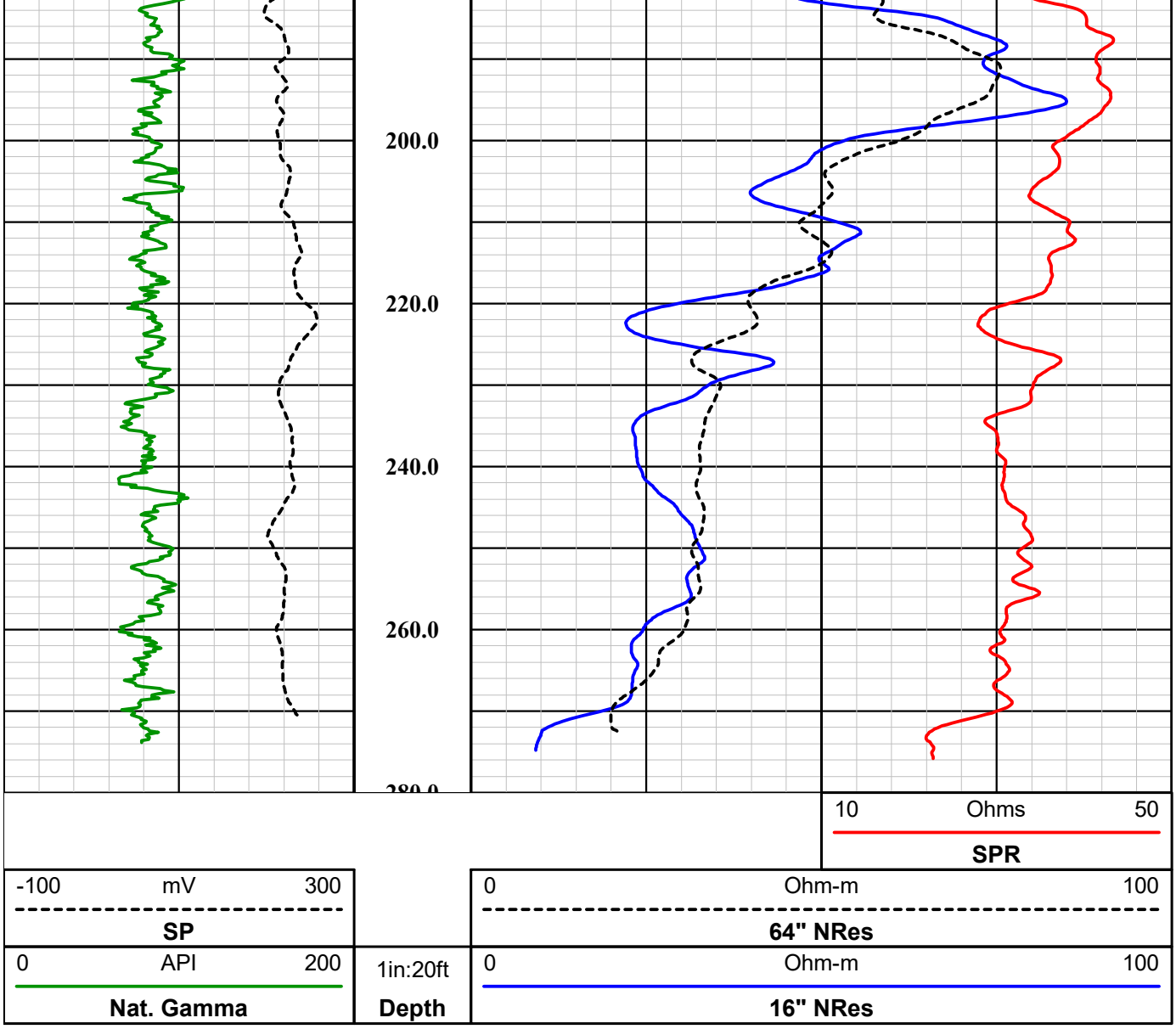
Caliper Arms Used: 15 IN. **Calibration Points:** 6 IN. & 12 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.





MSI 40 GRP E-Log Tool

Probe Top = Depth Ref.

Tool SN: 5019, 5513, & 5514

Four Conductor MSI Probe Top

Bridle connects to wireline cablehead: Wireline armor is the B Electrode.

Bridle Electrode (N Electrode)

Probe Length = 1.98 m or 6.5 ft
Bridle Length = 7.88 m or 25.86 ft

Probe Weight = 7.3 kg or 16.0 lbs

Can only be collected in fluid

Isolation Bridle

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

64" Normal Resistivity Electrode/Spontaneous Potential Electrode (M Electrode)

Electrode Measuring Points (from bottom of probe)
Spontaneous Potential (SP): 1.777 m or 5.81 ft
16" Normal Resistivity (16" NRes): 0.3548 m or 1.16 ft
64" Normal Resistivity (64" NRes): 0.9644 m or 3.16 ft
Single Point Resistance (SPR): 0.152 m or 0.50 ft
Natural Gamma Ray (Nat. Gamma): 0.73 m or 2.39 ft

Natural Gamma Ray

16" Normal Resistivity Electrode (M Electrode)

Current Electrode/Single Point Resistance Electrode (A Electrode)

1.63" or 40 mm Diameter (41.4 mm with neoprene heat shrink and electrical tape)

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	M52UBF
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final E-Log Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M52UBF
FIELD	FLORENCE COPPER
COUNTY	PINAL
STATE	ARIZONA

TYPE OF LOGS: GAMMA - CALIPER
MORE: TEMP. / FLUID RES.

LOCATION

SEC TWP RGE

OTHER SERVICES
E-LOGS
SONIC

PERMANENT DATUM	ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL	G.L.

DATE	1-26-17	TYPE FLUID IN HOLE	MUD
RUN No	1	MUD WEIGHT	N/A
TYPE LOG	GAMMA - CALIPER - TFR	VISCOSITY	N/A
DEPTH-DRILLER	279 FT.	LEVEL	FULL
DEPTH-LOGGER	275 FT.	MAX. REC. TEMP.	28.10 DEG. C
BTM LOGGED INTERVAL	275 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	A. OLSON / E. TURNER	TOOL STRING/SN	MSI COMBO TOOL 4183
WITNESSED BY	IAN - FLORENCE COPPER	LOG TIME:ON SITE/OFF SITE	7:30 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	10 5/8 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	1-26-17	**Date**	1-26-17	**Date**	1-26-17				
Run No.	1	**Run No.**	2	**Run No.**	3				
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	MSI 60MM SONIC				
Tool SN	4183	**Tool SN**	5514	**Tool SN**	5001				
From	SURFACE	**From**	SURFACE	**From**	SURFACE				
To	275 FT.	**To**	275 FT.	**To**	275 FT.				
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON				
Truck No	900	**Truck No**	900	**Truck No**	900				
Operation Check	1-25-17	**Operation Check**	1-25-17	**Operation Check**	1-25-17				
Calibration Check	1-25-17	**Calibration Check**	1-25-17	**Calibration Check**	N/A				
Time Logged	7:45 P.M.	**Time Logged**	8:10 P.M.	**Time Logged**	8:35 P.M.				

Date		**Date**		**Date**					
Run No.	4	**Run No.**	5	**Run No.**	6				
Tool Model		**Tool Model**		**Tool Model**					
Tool SN		**Tool SN**		**Tool SN**					
From		**From**		**From**					
To		**To**		**To**					
Recorded By		**Recorded By**		**Recorded By**					
Truck No		**Truck No**		**Truck No**					
Operation Check		**Operation Check**		**Operation Check**					
Calibration Check		**Calibration Check**		**Calibration Check**					
Time Logged		**Time Logged**		**Time Logged**					

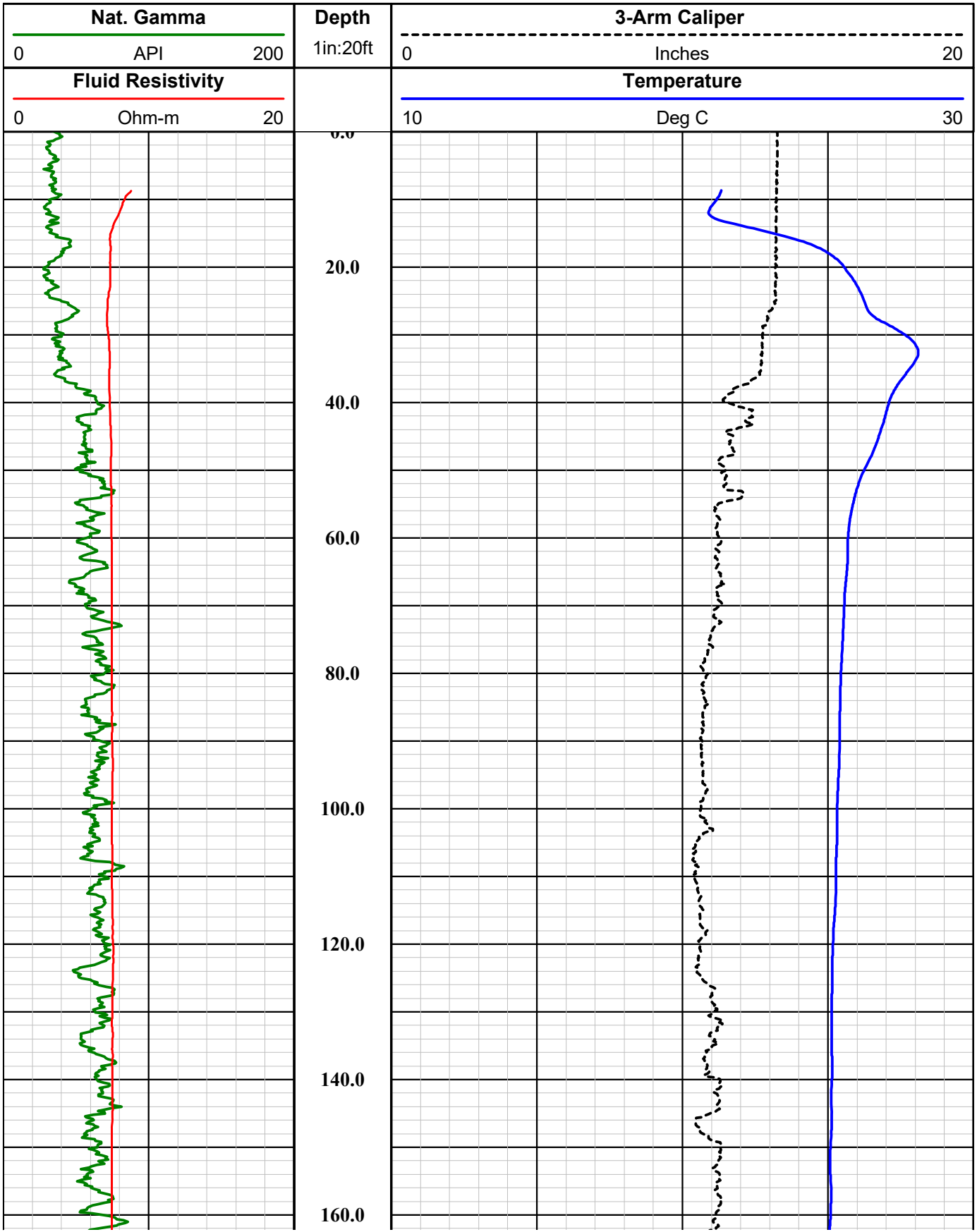
Additional Comments:

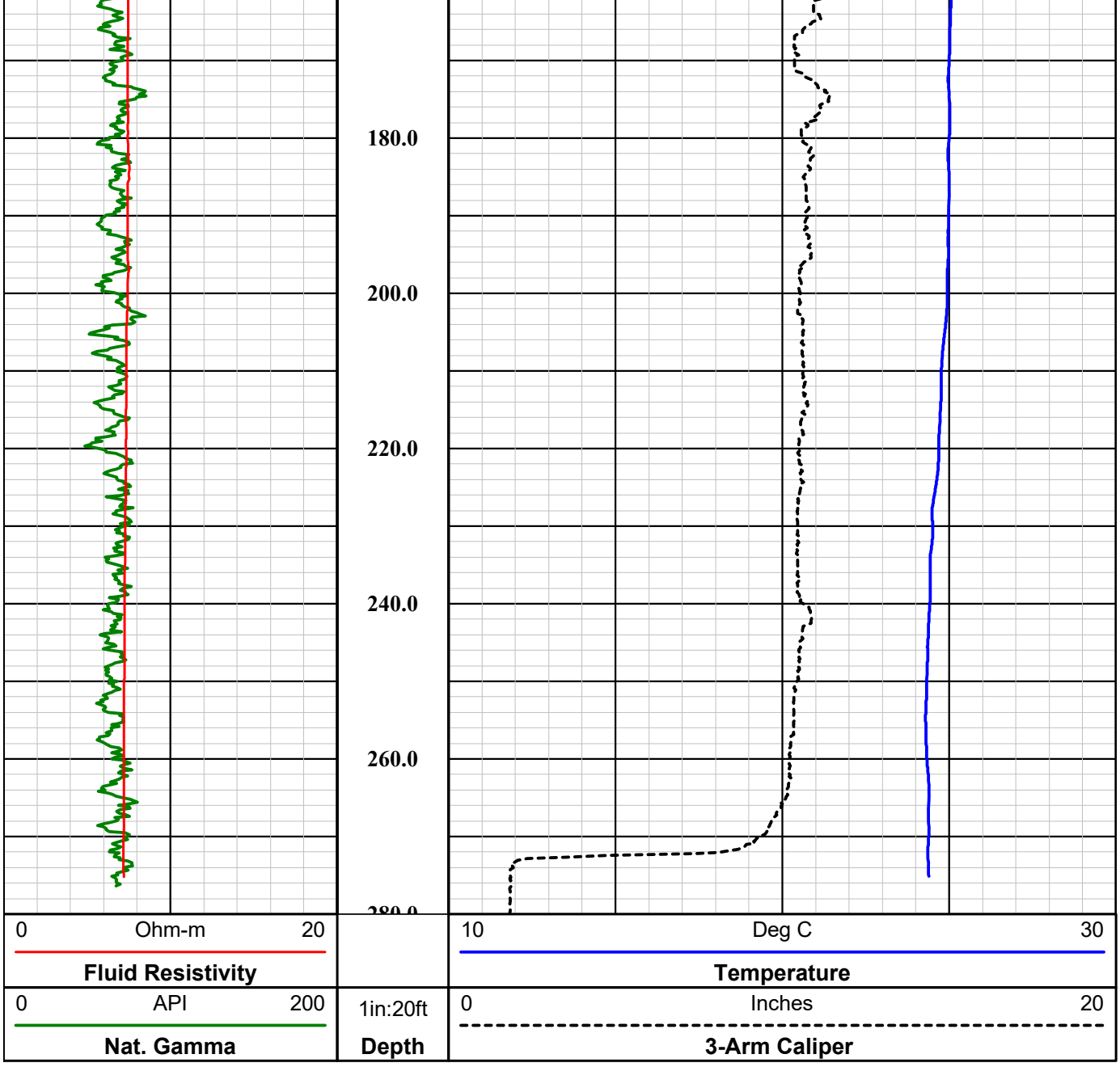
Caliper Arms Used: 15 IN. **Calibration Points:** 6 IN. & 12 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.





MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	M52UBF
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final GCT Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M52UBF
FIELD	FLORENCE COPPER
COUNTY	PINAL
STATE	ARIZONA

TYPE OF LOGS: 2RX SONIC
MORE: GAMMA - CALIPER
LOCATION
SEC TWP RGE

OTHER SERVICES
E-LOGS
TEMPERATURE
FLUID RESISTIVITY

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	1-26-17	TYPE FLUID IN HOLE	MUD
RUN No	1 & 3	MUD WEIGHT	N/A
TYPE LOG	SONIC - GAMMA - CALIPER	VISCOSITY	N/A
DEPTH-DRILLER	279 FT.	LEVEL	FULL
DEPTH-LOGGER	275 FT.	MAX. REC. TEMP.	28.10 DEG. C
BTM LOGGED INTERVAL	275 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.25 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	A. OLSON / E. TURNER	TOOL STRING/SN	MSI 2RX SONIC SN 5001
WITNESSED BY	IAN - FLORENCE COPPER	LOG TIME:ON SITE/OFF SITE	7:30 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	10 5/8 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	1-26-17	**Date**	1-26-17	**Date**	1-26-17				
Run No.	1	**Run No.**	2	**Run No.**	3				
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	MSI 60MM SONIC				
Tool SN	4183	**Tool SN**	5514	**Tool SN**	5001				
From	SURFACE	**From**	SURFACE	**From**	SURFACE				
To	275 FT.	**To**	275 FT.	**To**	275 FT.				
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON				
Truck No	900	**Truck No**	900	**Truck No**	900				
Operation Check	1-25-17	**Operation Check**	1-25-17	**Operation Check**	1-25-17				
Calibration Check	1-25-17	**Calibration Check**	1-25-17	**Calibration Check**	N/A				
Time Logged	7:45 P.M.	**Time Logged**	8:10 P.M.	**Time Logged**	8:35 P.M.				
Date		**Date**		**Date**		**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6	**Run No.**		**Run No.**	
Tool Model		**Tool Model**		**Tool Model**		**Tool Model**		**Tool Model**	
Tool SN		**Tool SN**		**Tool SN**		**Tool SN**		**Tool SN**	
From		**From**		**From**		**From**		**From**	
To		**To**		**To**		**To**		**To**	
Recorded By		**Recorded By**		**Recorded By**		**Recorded By**		**Recorded By**	
Truck No		**Truck No**		**Truck No**		**Truck No**		**Truck No**	
Operation Check		**Operation Check**		**Operation Check**		**Operation Check**		**Operation Check**	
Calibration Check		**Calibration Check**		**Calibration Check**		**Calibration Check**		**Calibration Check**	
Time Logged		**Time Logged**		**Time Logged**		**Time Logged**		**Time Logged**	

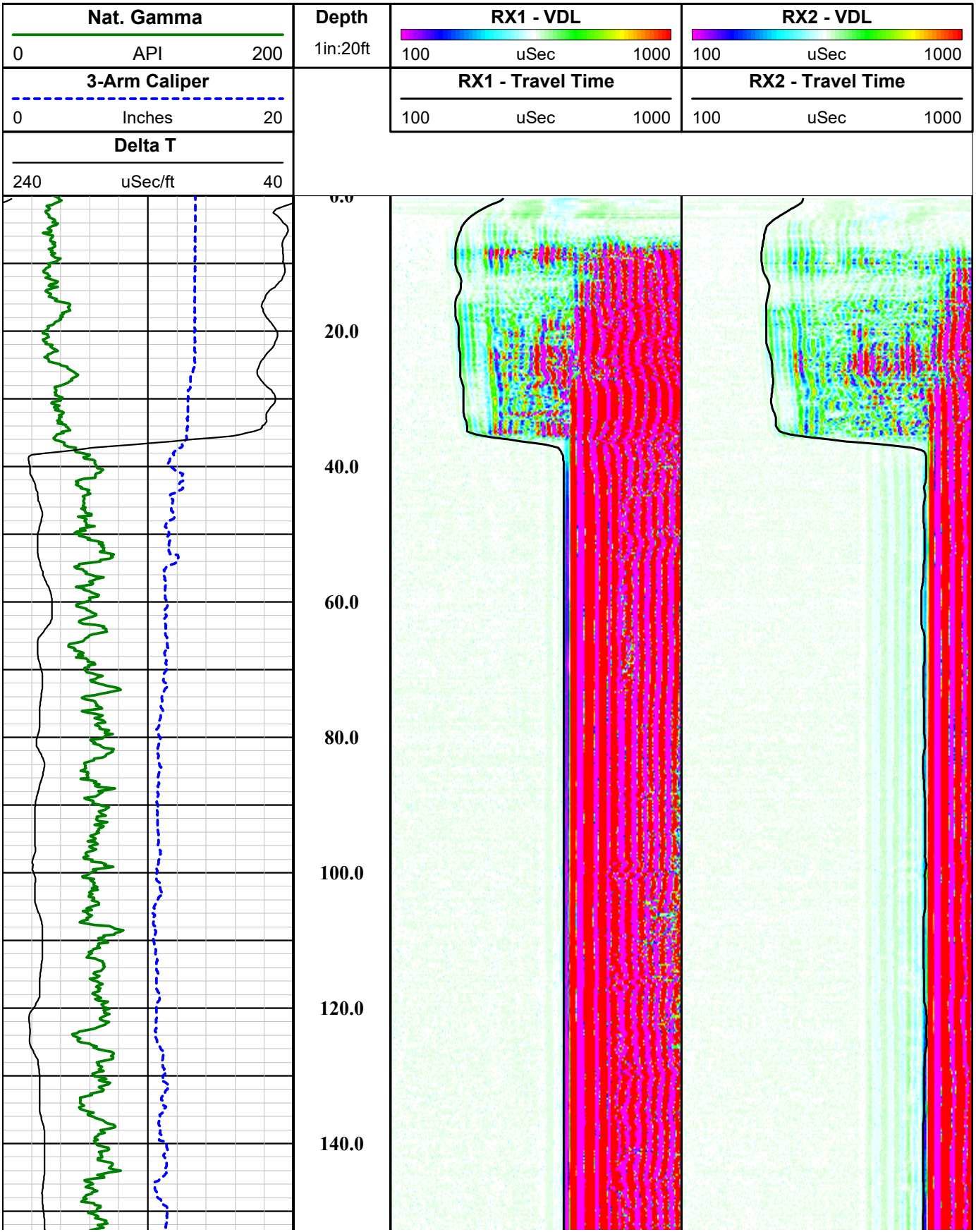
Additional Comments:

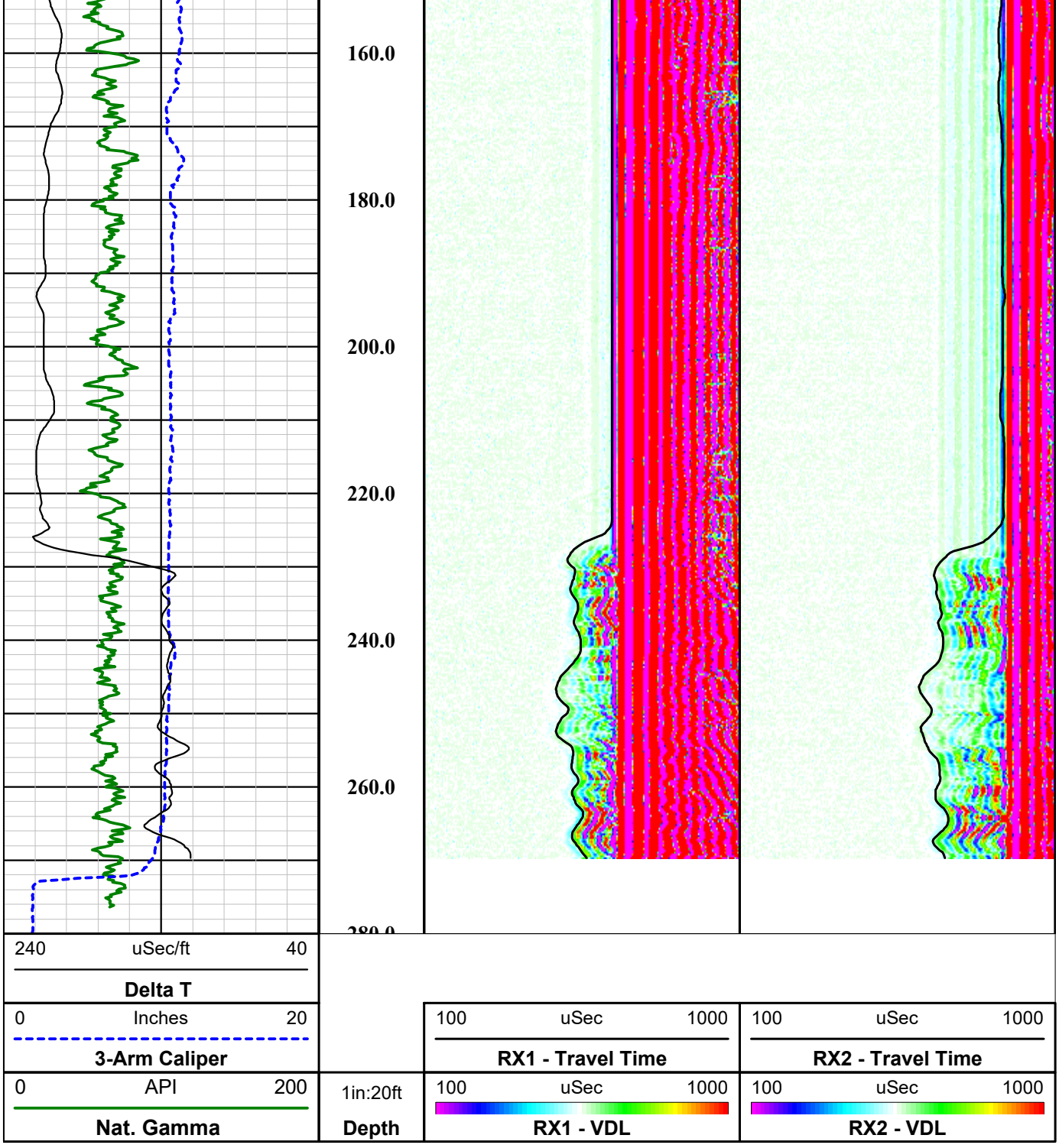
Caliper Arms Used: 15 IN. **Calibration Points:** 6 IN. & 12 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.





MSI 60 mm 2 RX Full Waveform Sonic Tool

Probe Top = Depth Ref.

Tool SN: 6001 & 6002

Four Conductor MSI Probe Top

Probe Length = 2.8 m or 9.19 ft

Probe Weight = ~26.5 kg or 58.4 lbs

Sensors: Ceramic Piezoelectric

Transmitter Frequency: 24 - 28 kHz resonant frequency

Transmitter Frequency: 24 - 28 kHz resonant frequency

Rx - Rx Spacing: 0.3 m (12.0 in)

Typically centralized with external centralizers

Can only be collected in fluid

Temperature Rating: 80 Deg C (176 Deg F)
Presure Rating: 200 bar (2900 psi)

0.660 m or 26.0 in. - End of tool to center of Tx

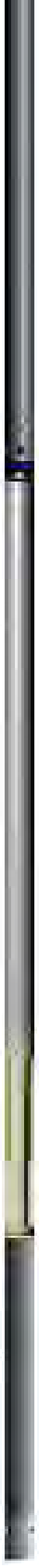
2.36 in or 60 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.



Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	M52UBF
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final Sonic Summary

Final **Sonic Summary**

APPENDIX C

Lithologic Log

LITHOLOGIC LOG

M52-UBF

Project	Production Test Facility, Florence, Arizona		File No. 129687
Client	Florence Copper, Inc.		Sheet No. 1 of 4
Contractor	Cascade Drilling LLC		Cadastral Location D (4-9) 28 DAA
Drilling Method	Conventional Mud Rotary	Land Surface Elevation 1483.43 feet, amsl	Start 26 January 2017
Borehole Diameter(s)	17.5/10.625 in.	Datum State Plane NAD 83	Finish 27 January 2018
Rig Make & Model	Schramm T685WS	Location N 774,178 E 851,092	H&A Rep. C. Price

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
0	1480	SP		**POORLY GRADED SAND (0-20 feet)** Primarily fine to medium sand to 4 mm with ~5% fines. Sand is subrounded. Fines are nonplastic, have no toughness, are grayish brown, and have a weak reaction to HCL. **UBFU**	**Well Registry ID:** 55-226788 **Surface Completion:** Locking Well Vault & Concrete Pad **Well casing stickup:** 1.6 feet als
5	1475				
10	1470				
15	1465				
20	1460	SM	20	**SILTY SAND (20-60 feet)** Primarily fine to coarse sand with ~15% fines and ~10% gravel to 8 mm. Sand and gravel is angular. Fines have low plasticity, low toughness, are reddish brown, and have no reaction to HCL. **UBFU**	
25	1455				
30	1450				**Surface Casing:** 14-inch mild steel; 0 - 40 feet **Well Casing:** Nominal 5-inch diameter, SCH 80 PVC; 0 - 198 feet
35	1445				
40	1440				
45	1435				
50	1430				
55	1425				
60	1420	SM	60	**SILTY SAND with GRAVEL (60-155 feet)** Primarily fine to coarse sand with ~15% fines and ~30% gravel to 12 mm. Sand and gravel is angular. Fines have low plasticity, low toughness, are reddish brown, and have no reaction to HCL. **UBFU**	**Unit Intervals:** UBFU: 0 - 280 feet
65	1415				
70	1410				
75					

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

M52-UBF

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	
75	1405				**Seal:** Type V neat cement; 0 - 187 feet Fine sand & bentonite; 187 - 197 feet
80	1400				
85	1395				
90	1390				
95	1385				
100	1380				
105	1375				
110	1370				
115	1365				
120	1360				
125	1355				
130	1350				
135	1345				
140	1340				
145	1335				
150	1330				
155	1325	SP-SM	155	**POORLY GRADED SAND with SILT and GRAVEL (155-180 feet)** Primarily coarse sand with ~10% fines and ~35% gravel to 14 mm. Sand and gravel is angular. Fines have low plasticity, low toughness, are reddish brown, and have no reaction to HCL. **UBFU**	
160					

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	
165	1320				
170	1315				
175	1310				
180	1305		180		
		SM		**SILTY SAND with GRAVEL (180-205 feet)** Primarily fine to coarse sand with ~15% fines and ~30% gravel to 8 mm. Sand and gravel is subangular. Fines have low plasticity, low toughness, is reddish brown, and has no reaction to HCL. **UBFU**	**Filter Pack:** 8 - 12 CO Silica Sand; 197 - 280 feet
185	1300				
190	1295				
195	1290				
200	1285				**Well Screen:** Nominal 5-inch diameter, SCH 80 PVC Screen (0.020-inch slots); 198 - 274 feet
205	1280		205		
		SP-SM		**POORLY GRADED SAND with SILT and GRAVEL (205-240 feet)** Primarily coarse sand with ~10% fines and ~35% gravel to 14 mm. Sand and gravel is angular. Fines have low plasticity, low toughness, are reddish brown, and has no reaction to HCL. **UBFU**	
210	1275				
215	1270				
220	1265				
225	1260				
230	1255				
235	1250				
240	1245		240		
		SP		**POORLY GRADED SAND with GRAVEL (240-275 feet)** Primarily medium to coarse sand with ~5% fines and ~45% gravel to 16 mm. Sand and gravel is subangular. Fines are nonplastic, have no toughness, are reddish brown, and have no reaction to HCL. **UBFU**	
245	1240				
	1235				

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LITHOLOGIC LOG

M52-UBF

File No. 129687
Sheet No. 4 of 4

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	
250					
	1230				
255					
	1225				
260					
	1220				
265					
	1215				
270					
	1210				
275			275		
		CL		**SANDY LEAN CLAY (275-280 feet)** Primarily fines with ~30% sand and ~5% gravel to 8 mm. Sand is subangular, gravel is angular. Fine have medium plasticity, medium toughness, medium dry strength, are reddish brown, and no reaction to HCL. **UBFU**	
	1205				
280			280		**Total Depth:** Driller Depth = 280 feet; Geophysical Logging Depth = 275 feet

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

M52-UBF

APPENDIX D

Well Completion Forms

PIPE TALLY

Project Name.:	Florence Copper	Project No.:	129687-002
Well No.:	M52-VBF	Date:	1-26-17
Location:		Pipe Talley for:	Well install
Total Depth:	280'	Geologist:	C Price

Type of Connections: ☐ Welded ☐ T+C ☒ Flush Thread ☐ Other

Pipe	Cent ✓	Length (ft)	Length Σ (ft)	Pipe Type	Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type
1		0.52	0.52	cap 0.52					
2	✓	5.00	5.52	0.020 screen					
3		10.02	15.54	0.020 screen					
4		20.00	35.54	0.020 screen					
5	✓	20.00	55.54	0.020 screen	~~10.00~~ 2200				
6		20.00	75.54	0.020 screen					
7		20.01	95.55	blank					
8	✓	20.01	115.56						
9		20.00	135.56						
10		20.01	155.57						
11	✓	20.00	175.57						
12		20.00	195.57						
13		20.00	215.57						
14	✓	20.01	235.58						
15		20.00	255.58						
16	✓	20.00	275.58		2230				

SUMMARY OF TALLY

Total Length tallied:	275.58
Casing Stick-Up:	1.85'
Length of Casing Cut-Off:	0
Bottom of Well:	273.73
Screened Interval:	273.73
Total Screen in Hole:	198.19

Notes:

Sch 80 - 5" nominal PVC
Screen 0.020 slot

Thin mud - Start casing @ 0945 (2145) Done @ 2230

Centralizers every 60 Feet
- Gravel Pack -
145 gal - Tag @ 255

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7:30

Jan - site specific

ESTIMATED ANNULAR MATERIAL RECORD

Project Name: Florence Copper **Project #.:** 129657-002 **Date:** 1-27-17
Well No.: M52-UBF **Geologist:** C Price, I Beam

ANNULAR VOLUME CALCULATIONS

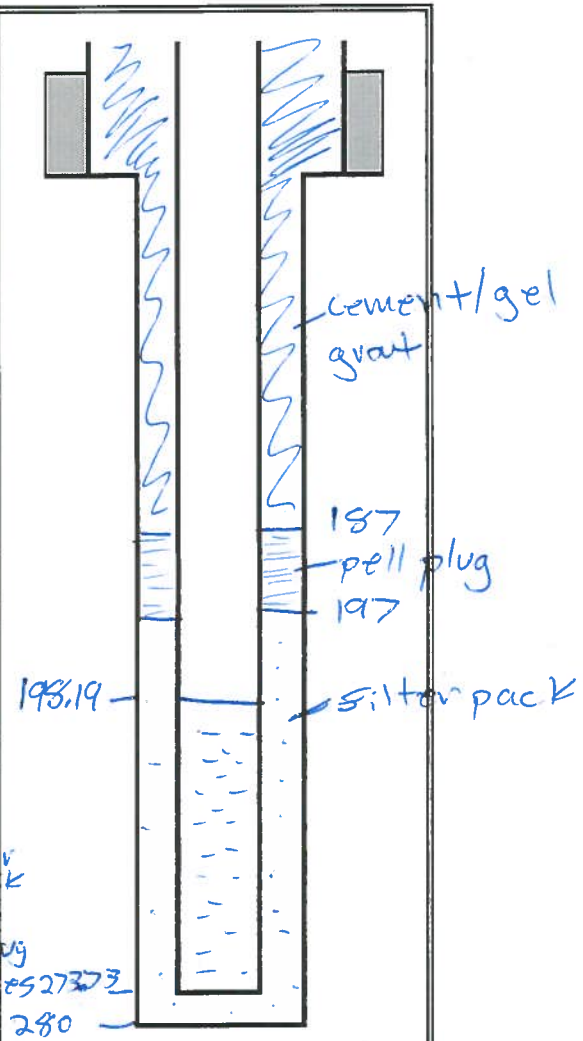
Total Depth of Borehole [T]:	280 feet	Total Cased Depth:	273.73 feet
Borehole Diameter [D]:	10.5 inches	Rat Hole Volume [R=(D^2) 0.005454*L_r]:	~3.0 Ft^3
Screen Length [L_s]:	75 feet	Rat Hole Length [L_r]	6.27 feet
Screen Diameter [d_s]:	5.56 inches	Camera Tube Length [L_{ct}]	— feet
Casing Length [L_c]	200 feet	Camera Tube Diameter [d_{ct}]	— inches
Casing Diameter [d_c]	5.56 inches		

Screen Annular Volume (A_s): (D^2-d_s^2) 0.005454 = 0.43 Ft^3/Lin. Ft
Casing Annular Volume (A_c): (D^2-d_c^2) 0.005454 = 0.43 Ft^3/Lin. Ft
Casing/Cam.Tube Annular Volume (A_{c+ct}): (D^2-d_c^2-d_{ct}^2) 0.005454 = — Ft^3/Lin. Ft

EQUATIONS

2,700 lbs. Silica Sand = 1 cubic yard = 27 cubic feet
Bentonite Sack = 0.69 ft^3
[1] Volume of bag (Ft^3) = bag weight/100
Silica Sand Super Sack = 3000 lbs.
[2] Calculated depth = Previous Calculated depth - (v/A)

No.	✓	Weight of Bag (lbs.)	Volume of Bag[1] (v) (ft^3)	Total Vol. of Bags (ft^3)	Calculated Depth[2] (ft bls)	Tagged Depth (ft bls)	Comments
			9.3	9.3	260	255	14-5 gal buckets filter pack
			18.7	28.0	211	217	28-5 gal buckets
			10.0	38.0	193	197	15-5 gal buckets
			2.0	40.0	192	187	3-5 gal buckets pellet plug
			147	187.0		0	4-27.5 gal grout mixes 273.73
							280



1 grout mix = 19 bag cement
2 bags of gel

Ian Beam onsite during activities

Grout Finished @ 03:30 1-27-17

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pH and TEMP CALIBRATION RECORD

Florence Copper Project

Instrument: YSI 556 (Terra Tech)
SN: 11M100002
Probe SN:

APP Sampling Event
Month:
Year:

Calibration Procedures:

-pH calibration/measurement should be performed in accordance with protocols set forth by ***Standard Methods for the Examination of Water and Wastewater – 4500 H pH.*** Gentle agitation or stirring of sample should maintained during pH calibration and sample analysis.

-Temperature measurement should be performed in accordance with protocols set forth by ***Standard Methods for the Examination of Water and Wastewater – 2550 Temperature*** using an NIST traceable thermometer.

Calibration Standards Used:

Standard	Manufacturer	Lot#	Received	Expiration
4.00	Enviro Supply	6GJ01Φ		Oct. 2018
7.00	↓	6GI91Φ		Sept. 2018
10.00	↓	6GF797		June 2018
7.00 Chk				

Calibration Record

Date	Time	Sampler	pH 4.00		pH 7.00		pH 10.00		pH 7.00Chk		Temp Chk*	Notes**
			T (°C)	Cal.	T (°C)	Cal.	T (°C)	Cal.	T (°C)	Cal.	T (°C)	
2/14/17	8:17	JRA	16.96	4.14	17.01	6.78	16.97	9.93				
2/15/17	8:00	JRA	18.92	4.12	19.00	7.58	18.95	~~9.94~~	10.06			

* Temperature check performed with second NIST thermometer.
** If meter does not provide slope, ensure that the calibration is confirmed with a recheck of pH 7.0 in the column "pH 7.00Chk".
***Perform 7-Check every 10 measurements or if Temperature increases by 15 °F.
**** All maintenance to instrument during the field event should be logged on this form. All maintenance should also be logged on the "Preventative Maintenance" log.

DEVELOPMENT FIELD DATA LOG

Entries ~~Adults~~ for 2/13 copied from developers and I. Ream's notes. JRA 3/2/17

Project Name:	Project No.:
Well No.: MS2-UBF	Date/Time Started: 2/13/17
Total Depth of Well (ft bls):	Screen Interval (ft bls):
How Q Measured: bucket+watch	H&A Personnel: J. Anderson

	~~# Bail~~ Time	Discharge ~~(gals)~~ gpm	Cumulative Volume (gals)	Water Level (ft, bls)	Turbidity NTU	Temp (°C)	Sp. Cond. (µS/cm)	pH (SU)	Comment
2/13	~~14~~:00	20							gloomy
	14:30	20							gloomy
	15:00	↓							clear
	15:30	↓							clear-surge, 15 m recovery
	16:00	20							cloudy
	16:30	↓							clear-surge, 10 recovery
	~~17:00~~								
	17:00								cloudy
	17:30								clear-surge 10 m recovery
	18:00								clear
2/14	6:00								cloudy, recovery ~~6~~ 6:00-6:00
	6:30								cloudy
	7:00								cloudy, surge, 10 min recover
	7:30								cloudy
	8:00	↓							clear, surge 10 mm recover
	~~8:10~~								
	8:10				18		1446		pump on
	8:27				21	20.13	~~14.4~~	7.00	cloudy
	8:30								pump off
	8:40								pump on
	8:42				12.6	20.98	1425	7.12	
	8:50				40.1	20.69	1438	7.14	cloudy
	8:55				15.7	—	—	—	
	09:00				11.6	20.20	1444	7.19	clear, turn off pump

Comments:

HALEY & ALDRICH, INC.
One Arizona Center
400 E. Van Buren St., Suite 545
Phoenix, AZ 85004
602.760.2450

Technical Memorandum

14 September 2018
File No. 129687-010

TO: Florence Copper Inc.
Ian Ream, Senior Hydrogeologist

FROM: Haley & Aldrich, Inc.
Lauren Candreva, R.G.

Subject: Drilling and Installation Summary
PTF Point-of-Compliance Well M54-LBF
Florence Copper Inc., Florence, Arizona

This document describes the drilling, installation, and testing of Production Test Facility (PTF) point-of-compliance (POC) well M54-LBF for Florence Copper Inc. (Florence Copper) in Florence, Arizona, including the equipment used to perform the work, completion, and the results of well testing activities. Separate well completion reports have been created for each PTF well.

The Arizona Department of Water Resources Registry ID for well M54-LBF is 55-226792; the Well Registry Report is included in Appendix A. The well is located in the northeast quarter of the northwest quarter of the southwest quarter of Section 28 of Township 4 north, Range 9 East of the Gila and Salt River Baseline and Meridian (D(4-9)28CBA). The well location is show on Figure 1.

BOREHOLE DRILLING AND LOGGING

Florence Copper contracted National Exploration, Wells, & Pumps (National) to drill, install, and test well M54-LBF in accordance with *Bid Specifications: Installation of Three POC Wells, Production Test Facility, Florence, Arizona* (Haley & Aldrich, 2015). A Schramm T685WS drilling rig was used for all drilling and construction activities. Haley & Aldrich provided intermittent oversight of drilling activities, geophysical logging, well installation, and testing. Brown and Caldwell also provided oversight for some activities. All reported depths are in feet below ground surface unless otherwise noted.

A steel surface casing (nominal 14-inch diameter; 17.5-inch diameter borehole) with cement surface seal was installed to 40 feet on 8 February 2017. Type V neat cement was installed from total depth to ground surface using the submerged tremie method.

Borehole drilling (10⅝-inch diameter, mud-rotary drilling method) commenced on 8 February 2017 and was completed to a total depth of 640 feet on 11 February 2017. On 12 February 2018, Southwest Exploration Services, LLC completed the following downhole geophysical logs within the borehole (Figure 2; Appendix B):

- Specific potential;
- Natural gamma;
- Electrical resistivity;
- Fluid conductivity;
- Caliper;
- Temperature; and
- Sonic.

Geology

The borehole lithology was determined by inspecting drill cuttings as the borehole advanced and were refined based on the results of the geophysical surveys. The borehole penetrated the Upper Basin Fill Unit (UBFU) and Middle Fine-Grained Unit (MFGU) and terminated in the Lower Basin Fill Unit. The depths to the lithologic contacts of the units are as follows:

- Bottom of UBFU – 287 feet; and
- Bottom of MFGU – 300 feet.

A lithologic log of the well M54-LBF borehole is provided in Appendix C.

WELL INSTALLATION AND DEVELOPMENT

Installation

The well was installed on 12 February 2017 and consists of 5-inch nominal diameter casing and screen installed to 630 feet (Figure 3). The blank well casing is nominal 5-inch diameter mild steel and reaches a depth of 310 feet. The well screen is nominal 5-inch diameter Schedule 80 polyvinyl chloride (PVC) screen with 0.020-inch-wide slots and extends from 3,010 to 629 feet. The bottom of the well is closed with a PVC cap. During casing installation, 316 grade stainless steel centralizers were installed at approximately 40-foot intervals. A steel cross-over conforming to the specifications of the casing and screen, manufactured from mild steel, was used to join the casing and screen. Pipe tally forms are included in Appendix D.

Annular materials were installed on 12 February 2017 using tremie pipe. Filter pack consisting of No. 8 to 12 US Mesh Colorado Silica Sand was installed from the total depth of the borehole (640 feet) to 300 feet. An interval of bentonite chips was installed from 285 to 300 feet. Type V neat cement was installed using the submerged tremie method from 285 feet to the ground surface. Annular material forms are included in Appendix D.

Development

After demobilization of the drill rig, the well was initially developed by the airlift method, followed by pump development. Development activities were completed by National using a workover rig. On 15 February 2017, an airline was temporarily installed to approximately 600 feet and airlift development of the well was conducted to purge drilling fluids and solids from the well. During airlift development, the airlift pump was turned on and off to surge the well. Airlift development was conducted for approximately 45 minutes. The discharge was clear and sand-free at the end of the airlift development period.

To pump develop the well, a submersible pump was temporarily installed on 15 February 2017. Prior to pumping, the static water level was approximately 226 feet. The pump development was conducted at approximately 20 gpm; the submersible pump was periodically turned off to surge the well during development. The discharge was sand-free and visually clear after approximately 1 hour of pump development; however, development was continued for 5 hours. The development was concluded on 15 February 2017. The discharge was sand-free with turbidity values less than 5 Nephelometric Turbidity Units. Well development forms are included in Appendix D.

In July 2017, the static depth to water at well M54-LBF was measured at 234.95 feet.

Well Completion

Upon completion, a locking, 14-inch diameter surface vault was installed in a concrete pad at the surface. A QED Environmental Systems Well Wizard® low-flow bladder pump was installed with a pump intake depth of 470 feet below the top of casing.

The surveyed location of well M54-LBF is:

Northing (feet)	Easting (feet)	Measuring Point Elevation (feet amsl)
746682.61	847331.96	1481.92

***Notes**:*
Northing and easting locations provided in State Plane North American Datum 1983, vertical location provided in North American Vertical Datum 1988.
amsl – feet above mean sea level

Ambient water quality sampling was conducted at the well. The water quality results and water level elevations measured are summarized in *Procedures for Determining Alert Levels and Aquifer Quality Limits for Groundwater Compliance Monitoring* (Brown and Caldwell, 2018).

REFERENCES

Brown and Caldwell, Inc., 2018. *Procedures for Determining Alert Levels and Aquifer Quality Limits for Groundwater Compliance Monitoring, Florence Copper Project, Florence, Arizona*. June.

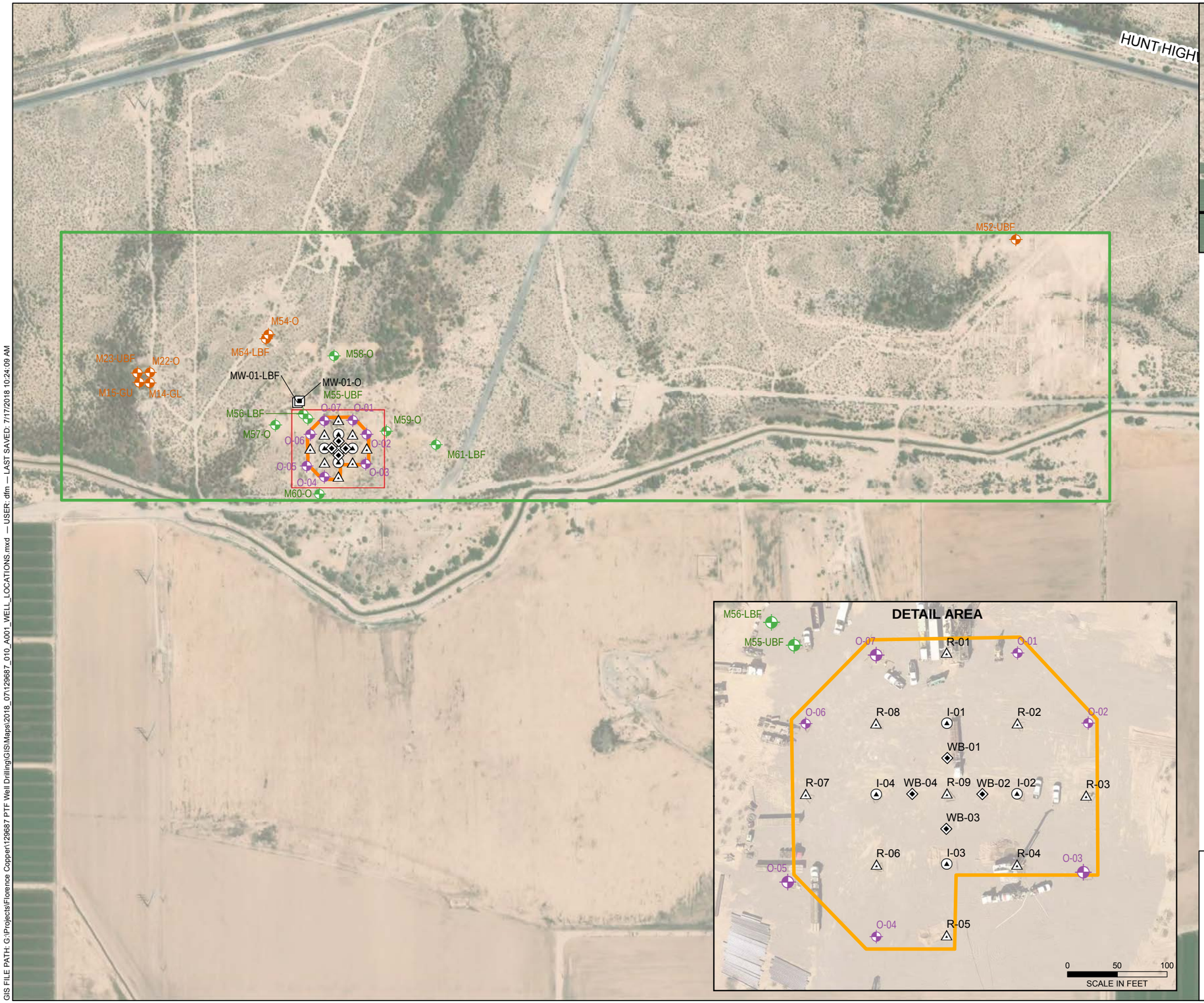
Haley & Aldrich, Inc., 2015. *Bid Specifications: Installation of Three POC Wells, Production Test Facility, Florence, Arizona*. June 2015 for Florence Copper Inc.

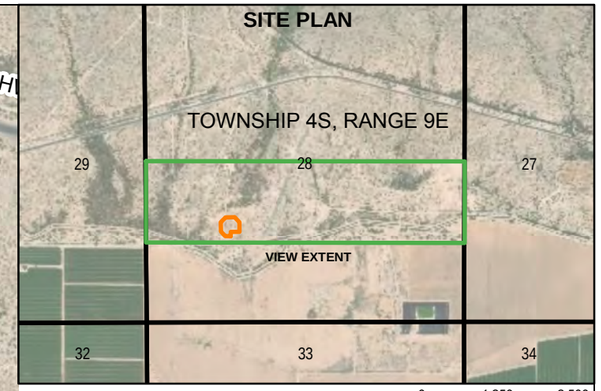
Enclosures:

- Figure 1 – Well Locations
- Figure 2 – M54-LBF Point-of-Compliance Well Geophysical Data and Lithologic Log
- Figure 3 – M54-LBF Point-of-Compliance Well As-Built Diagram
- Appendix A – Arizona Department of Water Resources Well Registry Report
- Appendix B – Geophysical Surveys
- Appendix C – Lithologic Log
- Appendix D – Well Completion Forms

\\haleyaldrich.com\share\phx_common\Projects\Florence Copper\129687 PTF Well Drilling\Deliverables\Well Summary Reports\M54-LBF\2018-0914_M54-LBF Well Install Comp Letter Report_F.docx

FIGURES





LEGEND

- OBSERVATION WELL
- SUPPLEMENTAL MONITORING WELL
- POINT-OF-COMPLIANCE WELL

PTF WELL

- INJECTION
- RECOVERY
- WESTBAY WELL
- OPERATIONAL MONITORING
- PTF WELL FIELD
- STATE LAND LEASE

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

0 500 1,000
SCALE IN FEET

HALEY ALDRICH

FLORENCE COPPER PROJECT
FLORENCE, ARIZONA

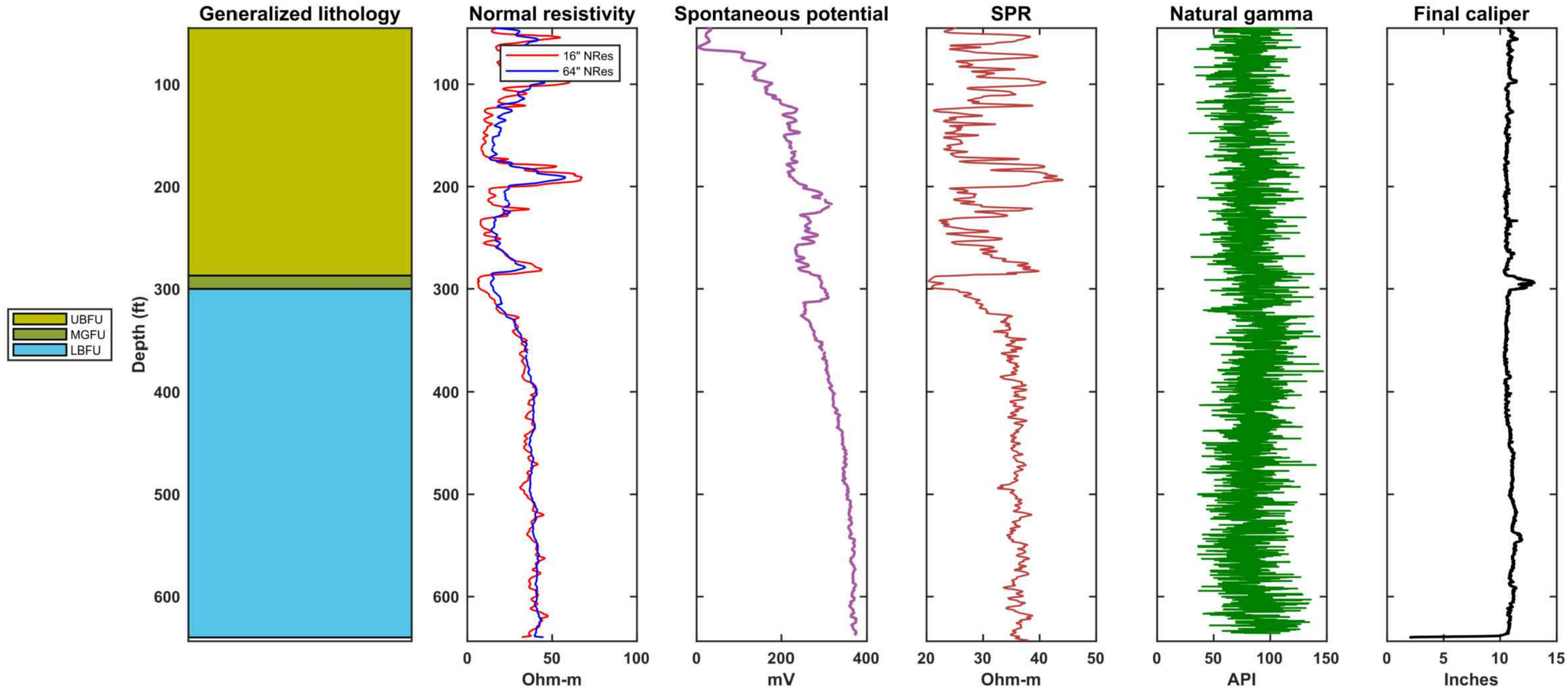
WELL LOCATIONS

FLORENCE COPPER INC.

AUGUST 2018

FIGURE 1

GIS FILE PATH: G:\Projects\Florence Copper\129687 PTF Well Drilling\GIS\Maps\2018_07\129687_010_A001_WELL_LOCATIONS.mxd — USER: dfm — LAST SAVED: 7/17/2018 10:24:09 AM



MCELENEY, TERRI Printed: 6/14/2018 3:33 PM Layout: M54LBF
G:\129687GLOBALICAD\129687-010 GEOPHYICAL DATA 2018-0614.DWG

HALEY ALDRICH

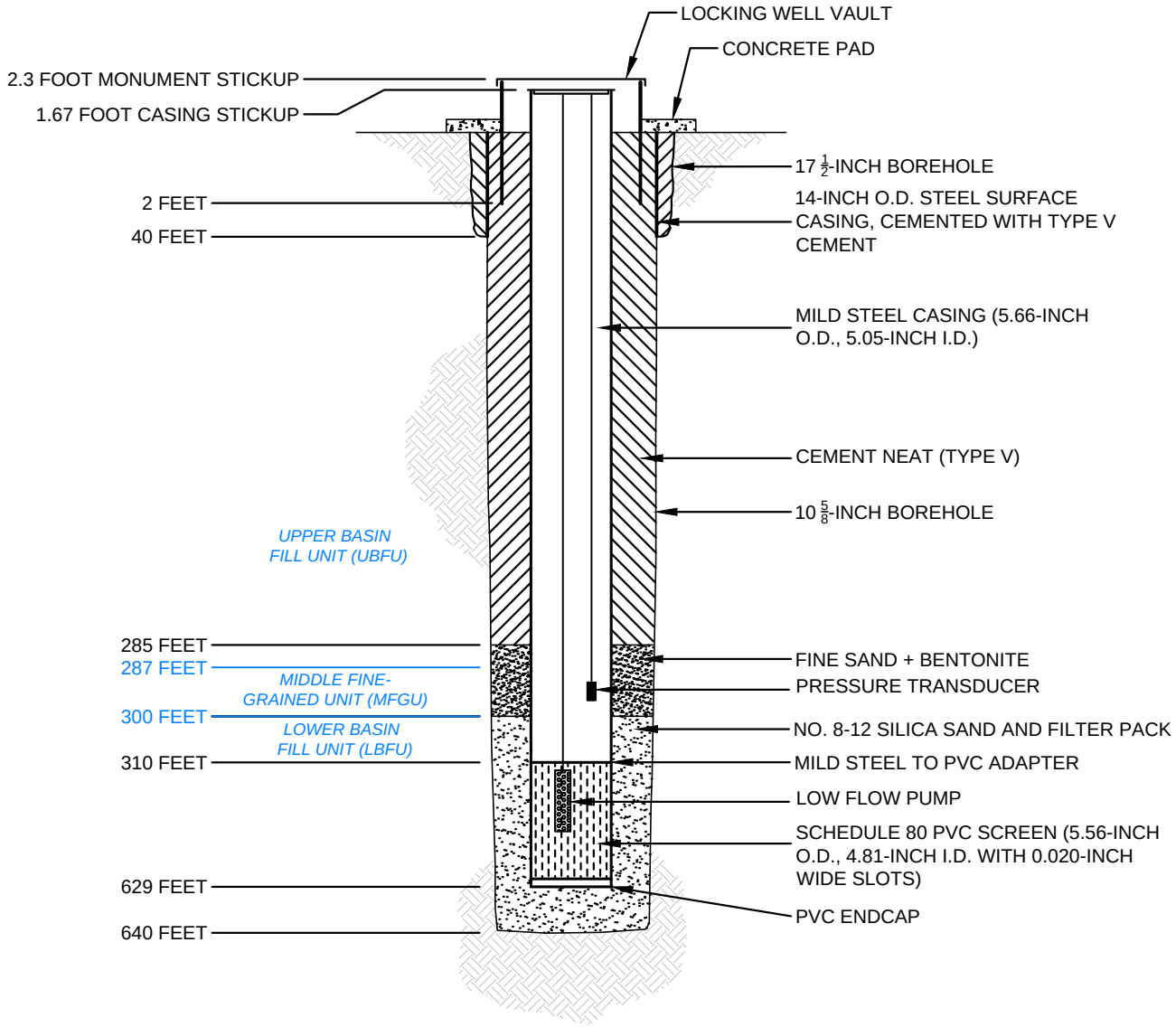
PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

M54-LBF POINT OF COMPLIANCE WELL GEOPHYSICAL DATA AND LITHOLOGIC LOG

FLORENCE COPPER

SCALE: AS SHOWN
SEPTEMBER 2018

FIGURE 2



NOTES

1. WELL REGISTRATION NO.: 55-226792
2. CADASTRAL LOCATION: D (4-9) 28 CBA
3. TOP OF CASING ELEVATION: 1481.92' AMSL
4. CONCRETE PAD ELEVATION: 1480.18' AMSL
5. I.D. = INSIDE DIAMETER
6. O.D. = OUTSIDE DIAMETER
7. PVC = POLYVINYL CHLORIDE

HALEY ALDRICH

PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

M54-LBF
POINT-OF-COMPLIANCE WELL
AS-BUILT DIAGRAM

FLORENCE COPPER INC.

SCALE: NOT TO SCALE
SEPTEMBER 2018

FIGURE 3

APPENDIX A

Arizona Department of Water Resources Well Registry Report

Arizona Department of Water Resources
Water Management Division
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8627 • (602) 771-8690 fax
· www.azwater.gov ·

RECEIVED
APR 23 2018
ADWR

Well Driller Report and Well Log

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK.

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 226792

PERMIT NUMBER (IF ISSUED)

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

Mail To:

NAME: National EWP
ADDRESS: 1200 west San Pedro Street
CITY / STATE / ZIP: Gilbert, AZ, 85233

DWR LICENSE NUMBER: 823
TELEPHONE NUMBER: 480-558-3500
FAX:

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Florence Copper, INC
MAILING ADDRESS: 1575 W.Hunt HWY
CITY / STATE / ZIP CODE: Florence, AZ, 85132
CONTACT PERSON NAME AND TITLE: Ian Ream, Senior Hydraulogist
TELEPHONE NUMBER: 520 374 3984
FAX:
WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.): M54-LBF

Location of Well

WELL LOCATION ADDRESS (IF ANY): Same as well owner

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0S	9.0 E	28	SE ¼	NW ¼	SW ¼

LATITUDE			LONGITUDE		
33° Degrees	3' Minutes	6 "N Seconds	111° Degrees	26 ' Minutes	9"W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)
☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: 1490 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE)
☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*GEOGRAPHIC COORDINATE DATUM (CHECK ONE)
☒ NAD-83 ☐ Other *(please specify)*:

COUNTY: Pinal

ASSESSOR'S PARCEL ID NUMBER: BOOK 0 MAP 0 PARCEL 0

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ALL THAT APPLY
☐ Air Rotary
☐ Bored or Augered
☐ Cable Tool
☐ Dual Rotary
☒ Mud Rotary
☐ Reverse Circulation
☐ Driven
☐ Jetted
☐ Air Percussion / Odex Tubing
☐ Other *(please specify)*:

Method of Well Development

CHECK ALL THAT APPLY
☒ Airlift
☐ Bail
☐ Surge Block
☐ Surge Pump
☐ Other *(please specify)*:

Condition of Well

CHECK ONE
☒ Capped
☐ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
☒ None
☐ Packed
☐ Swedged
☐ Welded
☐ Other *(please specify)*:

Construction Dates

DATE WELL CONSTRUCTION STARTED: 02-08-17
DATE WELL CONSTRUCTION COMPLETED: 02-13-17

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY

DATE: 2-23-18

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 226792

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Depth

DEPTH OF BORING	DEPTH OF COMPLETED WELL
640 Feet Below Land Surface	630 Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
231 Feet Below Land Surface	2-13-17	12:00pm	☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	40	17.5
40	640	10.625

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	309.5		x				x						
309.5	630			x							x		

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	285			x								
285	300							x	pell plug			
300	640										x	8x12

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 226792

SECTION 5. GEOLOGIC LOG OF WELL

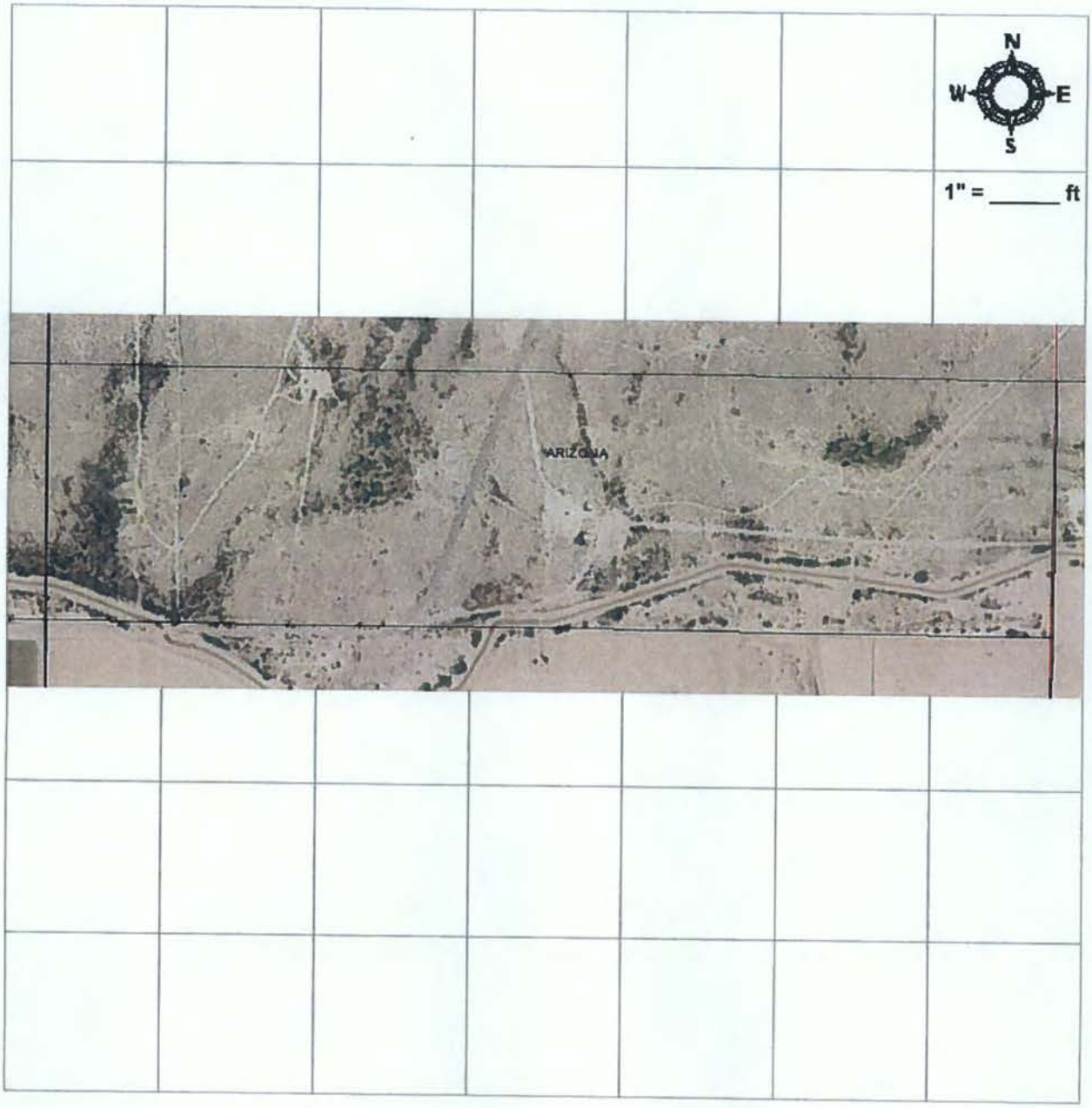
DEPTH FROM SURFACE		Description	Check (T) every interval where water was encountered (if known)
FROM (feet)	TO (feet)	Describe material, grain size, color, etc.	
0	300	Upper Basin Fill Unit	
300	640	Lower Basin Fill Unit	

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 226792

SECTION 6. WELL SITE PLAN			
NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)		
	BOOK	MAP	PARCEL
FLORENCE COPPER, INC.			

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



Run Date: 01/13/2017

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location D 4.0 9.0 28 C B A

Well Reg.No 55 - 226792

AMA PINAL AMA

Registered Name FLORENCE COPPER, INC.
1575 W. HUNT HWY
FLORENCE AZ 85132

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 01/11/2017

Owner OWNER
Driller No. 823
Driller Name NATIONAL EWP, INC.
Driller Phone 480-558-3500
County PINAL

Intended Capacity GPM 0.00

Well Type ENV - MONITOR
SubBasin ELOY
Watershed UPPER GILA RIVER
Registered Water Uses MONITORING
Registered Well Uses MONITOR
Discharge Method NO DISCHARGE METHOD LISTED
Power NO POWER CODE LISTED

Well Depth	0.00	**Case Diam**	0.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	0.00	**CRT**	
Draw Down	0.00	**Water Level**	0.00	**Log**	
		Acres Irrig	0.00	**Finish**	NO CASING CODE LISTED

Contamination Site: NO - NOT IN ANY REMEDIAL ACTION SITE

Tribe: Not in a tribal zone

Comments Well M54-LBF
Landownership: AZ State Land Dept. (Mineral Lease #11-026500)
TV

Current Action

1/13/2017 555 DRILLER & OWNER PACKETS MAILED
Action Comment: TNV

Action History

1/13/2017 550 DRILLING AUTHORITY ISSUED
Action Comment: TNV

1/11/2017 155 NOI RECEIVED FOR A NEW NON-PRODUCTION WELL
Action Comment: TNV

ARIZONA DEPARTMENT OF WATER RESOURCES

1110 W. Washington St. Suite 310
Phoenix, Arizona 85007

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-226792**

AUTHORIZED DRILLER: **NATIONAL EWP, INC.** LICENSE NO: **823**

NOTICE OF INTENTION TO DRILL ENV - MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **FLORENCE COPPER, INC. 1575 W. HUNT HWY FLORENCE, AZ, 85132**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

NE 1/4 of the **NW** 1/4 of the **SW** 1/4 Section **28** Township **4.0** **SOUTH** Range **9.0** **EAST**

NO. OF WELLS IN THIS PROJECT: **1**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **January 11, 2018**

Stella Murillo

GROUNDWATER PERMITTING AND WELLS

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St. Suite 310
Phoenix, AZ 85007
602-771-8500
azwater.gov

January 13, 2017

FLORENCE COPPER, INC.
1575 W. HUNT HWY
FLORENCE, AZ 85132

DOUGLAS A. DUCEY
Governor

THOMAS BUSCHATZKE
Director

Registration No. 55- 226792
File Number: D(4-9) 28 CBA

Dear Well Applicant:

Enclosed is a copy of the Notice of Intention to Drill (NOI) a well which you or your driller recently filed with the Department of Water Resources. This letter is to inform you that the Department has approved the NOI and has mailed, or made available for download, a drilling authorization card to your designated well drilling contractor. The driller may not begin drilling until he/she has received the authorization, and must keep it in their possession at the well site during drilling. Although the issuance of this drill card authorizes you to drill the proposed well under state law, the drilling of the well may be subject to restrictions or regulations imposed by other entities.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, a new NOI must be filed and authorization from this Department received before proceeding with drilling. If the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed by your driller [as required by A.A.C. R12-15-816(F)].

If you change drillers, you must notify the Department of the new driller's identity on a Request to Change Well Information (form 55-71A). Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he/she receives a new drilling authorization card from the Department.

If you find it necessary to change the location of the proposed well(s), you may not proceed with drilling until you file an amended NOI with the Department. An amended drilling authorization card will then be issued to the well drilling contractor, which must be in their possession before drilling begins.

Arizona statute [A.R.S. § 45-600] requires registered well owners to file a Pump Installation Completion Report (form 55-56) with the Department within 30 days after the installation of pumping equipment, if authorized. A blank report is enclosed for your convenience. State statute also requires the driller to file a complete and accurate Well Drillers Report and Well Log (form 55-55) within 30 days after completion of drilling. A blank report form was provided to your driller with the drilling authorization card. You should insist and ensure that all of the required reports are accurately completed and timely filed with the Department.

Please be advised that Arizona statute [A.R.S. § 45-593(C)] requires a registered well owner to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (form 55-71A) that may be downloaded from the ADWR Internet website at www.azwater.gov.

Sincerely,

Groundwater Permitting and Wells Section

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8500 • (602) 771-8690
· www.azwater.gov ·

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

$150 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - $150 check or money order for the filing fee.
  - Well construction diagram, labeling all specifications listed in Section 6 and Section 7.

  Authority for fee: A.R.S. § 45-596 and A.A.C. R12-15-104.

AMA / INA	B	SB
~~AMA~~ / Pinal	PIN	11
RECEIVED DATE	WS	
1/11/2017	08 UGR	
ISSUED DATE	REMEDIAL ACTION SITE	
1/13/2017	000	

FILE NUMBER: D(4-9)28 CBA
WELL REGISTRATION NUMBER: 55 - 226792

SECTION 1. REGISTRY INFORMATION

To determine the location of well, please refer to the Well Registry Map (https://gisweb.azwater.gov/WellRegistry/Default.aspx) and/or Google Earth (http://www.earthpoint.us/Townships.aspx)

Well Type (CHECK ONE)
- [x] Monitor
- [ ] Piezometer
- [ ] Vadose Zone
- [ ] Air Sparging
- [ ] Soil Vapor Extraction
- [ ] Other (*please specify*):

Proposed Action (CHECK ONE)
- [x] Drill New Well
- [ ] Deepen
- [ ] Modify

WELL REGISTRATION NUMBER (*if Deepening or Modifying*): 55 -

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP(N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0 S	9.0 E	28	SW ¼	NW ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK | MAP | PARCEL 1001

COUNTY WHERE WELL IS LOCATED: PINAL

SECTION 2. OWNER INFORMATION

Land Owner
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: AZ State Land Dept (Mineral Lease # 11-026500)
MAILING ADDRESS: 1616 W Adams St
CITY / STATE / ZIP CODE: Phoenix, AZ 85007
CONTACT PERSON NAME AND TITLE: Lisa Atkins, State Land Commissioner
TELEPHONE NUMBER: (602) 542-4631 FAX:

Well Owner (*check this box if Land Owner and Well Owner are same* [ ])
FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: Florence Copper, Inc.
MAILING ADDRESS: 1575 W Hunt Hwy
CITY / STATE / ZIP CODE: Florence, AZ 85132
CONTACT PERSON NAME AND TITLE: Ian Ream, Senior Hydrogeologist
TELEPHONE NUMBER: (520) 374-3984 FAX: (520) 374-3999

RECEIVED
JAN 11 2017
ADWR

SECTION 3. DRILLING AUTHORIZATION

Drilling Firm
NAME: National EWP
DWR LICENSE NUMBER: 823 ROC LICENSE CATEGORY: A-4
TELEPHONE NUMBER: (480) 558-3500 FAX: 480-558-3525
EMAIL ADDRESS: jstephens@nationalewp.com

Consultant (*if applicable*)
CONSULTING FIRM: Haley & Aldrich, Inc.
CONTACT PERSON NAME: Mark Nicholls
TELEPHONE NUMBER: 602-760-2423 FAX: 602-760-2448
EMAIL ADDRESS: mnicholls@haleyaldrich.com

SECTION 4.

Questions	Yes	No	Explanation:
1. Are all annular spaces between the casing(s) and the borehole for the placement of grout at least 2 inches?	[x]	[ ]	2-inch annular spaces are special standards required for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
2. Is the screened or perforated interval of casing greater than 100 feet in length?	[x]	[ ]	100-foot maximum screen intervals are a special standard for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
3. Are you requesting a variance to use thermoplastic casing in lieu of steel casing in the surface seal?	[ ]	[x]	The wells must be constructed in a vault. Pursuant to A.A.C. R12-15-801 (27) a "vault" is defined as a tamper-resistant watertight structure used to complete a well below the land surface.
4. Is there another well name or identification number associated with this well? (e.g., MW-1, PZ2, 06-04, etc.)	[x]	[ ]	If yes, please state M54-LBF
5. Have construction plans been coordinated with the Arizona Department of Environmental Quality?	[x]	[ ]	If yes, please state agency contact & phone number David Haag, 602-771-4669
6. For monitor wells, is dedicated pump equipment to be installed?	[x]	[ ]	If yes, please state design pump capacity *(Gallons per Minute)* Low-flow
7. Is this well a new well located in an Active Management Area AND intended to pump water for the purpose of remediating groundwater?	[ ]	[x]	You must also file a supplemental form A.R.S. § 45-454(c) & (f) unless the well is a replacement well and the total number of operable wells on the site is not increasing. *(See instructions)*
8. Will the well registration number be stamped on the vault cover or on the upper part of the casing?	[x]	[ ]	If no, where will the registration number be placed?

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER
55 - 226792

SECTION 6. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE

- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (*please specify*):

DATE CONSTRUCTION TO BEGIN
01/16/2017

Method of Well Development

CHECK ONE

- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other (*please specify*):

Method of Sealing at Reduction Points

CHECK ONE

- ☒ None
- ☐ Welded
- ☐ Swedged
- ☐ Packed
- ☐ Other (*please specify*):

Grout Emplacement Method

CHECK ONE

- ☒ Tremie Pumped *(Recommended)*
- ☐ Gravity
- ☐ Pressure Grout
- ☐ Other (*please specify*):

Surface or Conductor Casing

CHECK ONE

- ☐ Flush Mount in a vault
- ☒ Extends at least 1' above grade

SECTION 7. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

Attach a well construction diagram labeling all specifications below.

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	20
20	640	10.5

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	14	☒	☐	☐		☒	☐	☐	☐	☐		
0	310	5	☒	☐	☐		☒	☐	☐	☐	☐		
310	630	5	☐	☒	☐		☐	☐	☐	☐	☒		0.020

Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	275	☐	☐	☐	☒	☐	☐	☐		☐	☐	
275	300	☐	☐	☐	☐	☐	☒	☐		☐	☐	
300	640	☐	☐	☐	☐	☐	☐	☐		☒	☐	No. 8-12

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS

EXPECTED DEPTH TO WATER *(Feet Below Ground Surface)*: 220

SECTION 8. PERMISSION TO ACCESS

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 9. LAND OWNER AND WELL OWNER SIGNATURE

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and

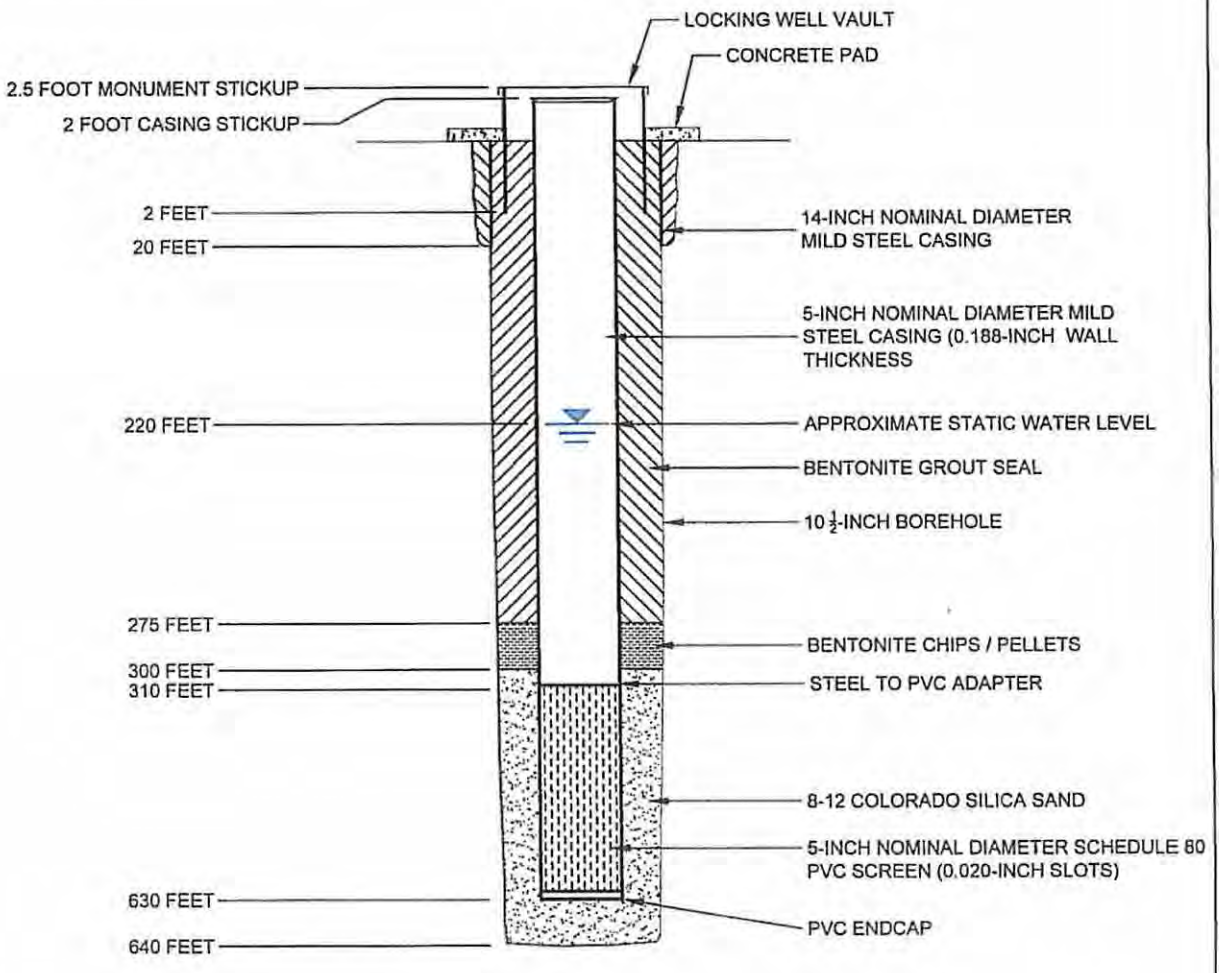
Land Owner	Well Owner *(if different from Land Owner; See instructions)*
PRINT NAME AND TITLE	PRINT NAME AND TITLE Ian Ream, Senior Hydrogeologist
SIGNATURE OF LAND OWNER	SIGNATURE OF WELL OWNER
DATE	DATE Jan 9, 2017
☐ By checking this box, you agree to allow ADWR to contact you via electronic mail.	☒ By checking this box, you agree to allow ADWR to contact you via electronic mail.
EMAIL ADDRESS	EMAIL ADDRESS IanReam@florencecopper.com

SECTION 5. Well Construction Diagram

Provide a well construction diagram showing all existing well construction features listed in Section 6 and Section 7.

See attached well diagram.

55-226792



HALEY ALDRICH

FLORENCE COPPER, INC.
FLORENCE, ARIZONA

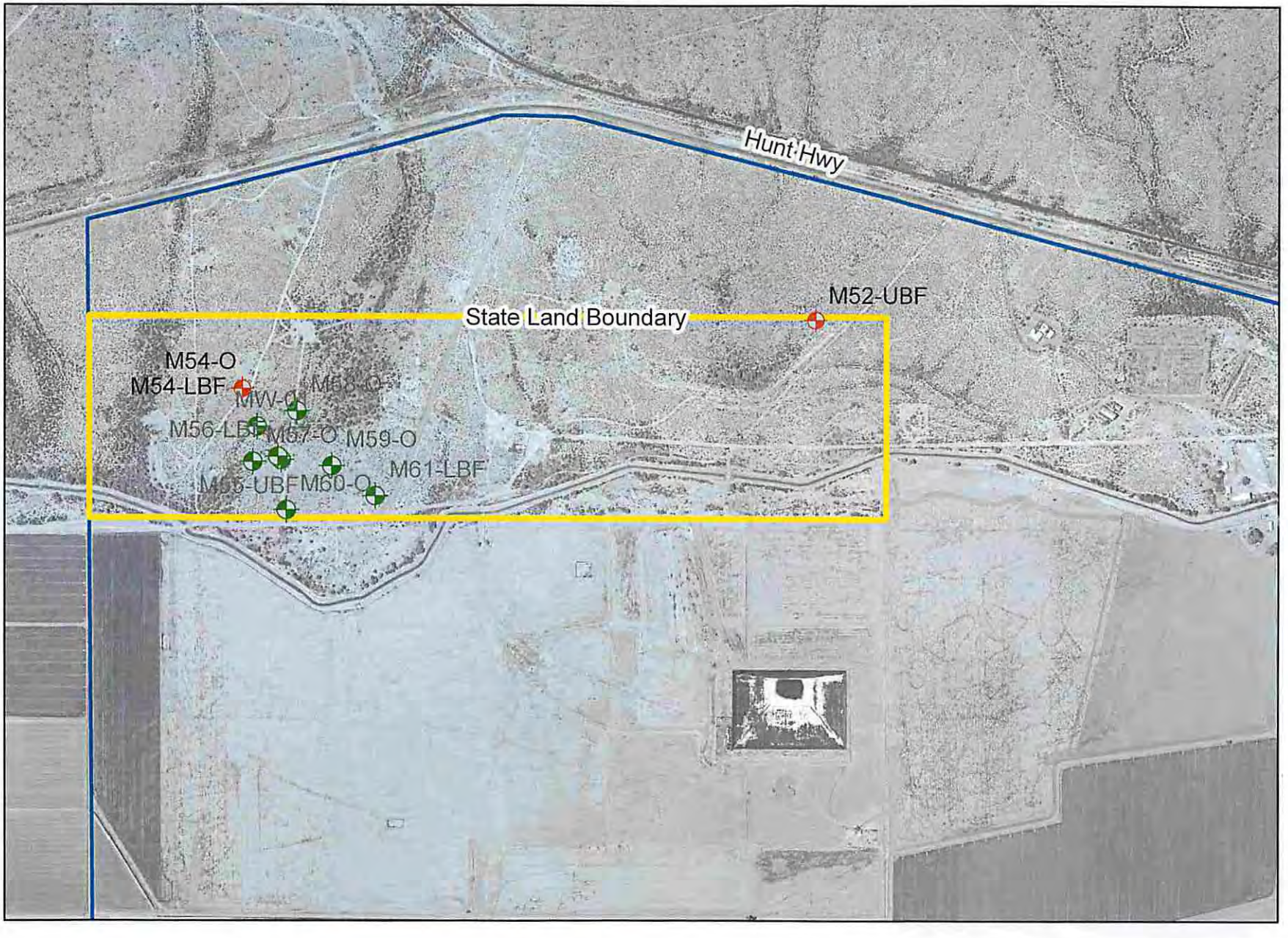
M54-LBF
WELL CONSTRUCTION DIAGRAM

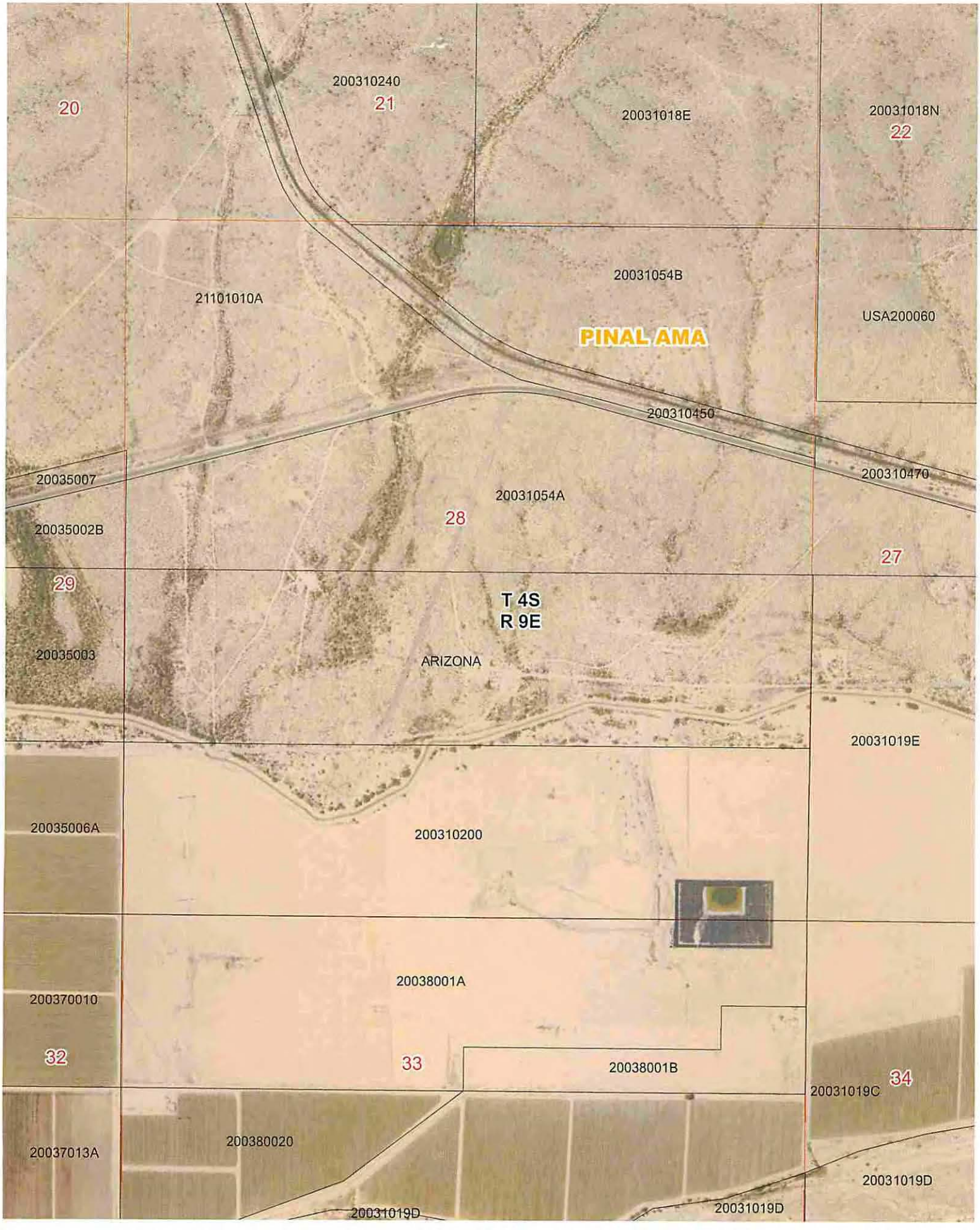
FLORENCE COPPER INC

SCALE: NOT TO SCALE

FIGURE 1

MOBINI, GITA Printed: 8/26/2015 2:18 PM Layout: 54-LBF
G:\PROJECTS\CURIS RESOURCES\338706-CURIS FEASIBILITY\DRAWINGS\M54-LBF_WELLDESIGN.DWG


Hunt Hwy
State Land Boundary
M52-UBF
M54-O
M54-LBF
MW-O
M58-O
M56-LBF
M57-O
M59-O
M61-LBF
M55-UBF
M60-O


200310240
20
21
20031018E
20031018N
22
20031054B
21101010A
USA200060
PINAL AMA
200310450
20035007
200310470
20031054A
20035002B
28
27
29
T 4S
R 9E
20035003
ARIZONA
20031019E
20035006A
200310200
20038001A
200370010
32
33
20038001B
34
20031019C
200380020
20037013A
20031019D
20031019D
20031019D

Torren Valdez

From: Ian Ream <IanReam@florencecopper.com>
Sent: Friday, January 13, 2017 9:06 AM
To: Torren Valdez
Subject: Re: Map of monitor well locations

Hi Torren,

The pumps will be QED micro purge. They typically do a liter or two a minute. Very low flow. Looking for discreet interval samples. The flow rate is based on drawdown. The goal is not to draw down the well much more than a half a foot or 1 foot.

Thanks,

Ian Ream
Senior Hydrogeologist
Florence Copper

On Jan 13, 2017, at 8:56 AM, Torren Valdez <tvaldez@azwater.gov> wrote:

> Ian,
>
> Would you happen to know the pump capacity (gpm) for the low-flow pumps that will be installed on those monitoring wells?
>
> Thank you,
>
> **Torren Valdez**
> Water Planning & Permitting Division
> Arizona Department of Water Resources
> 602.771.8614
>
> <image002.jpg>
>
> ---
>
> **From:** Ian Ream [mailto:IanReam@florencecopper.com]
> **Sent:** Thursday, January 12, 2017 11:13 AM
> **To:** Torren Valdez <tvaldez@azwater.gov>
> **Subject:** Map of monitor well locations
>
> Hi Torren,
>
> Here is a map with the well locations.
>
> Please don't hesitate to contact me if you need anything else or have any questions.
>
> Cheers,
>
> Ian

Ian Ream Senior Hydrogeologist

<image003.jpg>

Florence Copper Inc.
1575 W. Hunt Highway Florence AZ USA 85132
C 520-840-9604 **T** 520-374-3984 **F** 520-374-3999
E ianream@florencecopper.com **Web** florencecopper.com

"Notice Regarding Transmission

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NOTICE

A.R.S. § 41-1030(B), (D), (E) and (F) provide as follows:

B. An agency shall not base a licensing decision in whole or in part on a licensing requirement or condition that is not specifically authorized by statute, rule or state tribal gaming compact. A general grant of authority in statute does not constitute a basis for imposing a licensing requirement or condition unless a rule is made pursuant to that general grant of authority that specifically authorizes the requirement or condition.

D. This section may be enforced in a private civil action and relief may be awarded against the state. The court may award reasonable attorney fees, damages and all fees associated with the license application to a party that prevails in an action against the state for a violation of this section.

E. A state employee may not intentionally or knowingly violate this section. A violation of this section is cause for disciplinary action or dismissal pursuant to the agency's adopted personnel policy.

F. This section does not abrogate the immunity provided by section 12-820.01 or 12-820.02.

ARIZONA DEPARTMENTof WATER RESOURCES
1110 W. Washington St. Suite 310
Engineering and Permits Division
Phoenix, AZ 85007
602-771-8500

NOTICE TO WELL DRILLERS

This is a reminder that a valid drill card be present for the drilling of each and every well constructed on a site.* The problem seems to occur during the construction of a well when an unexpected problem occurs. Either the hole collapses, the hole is dry, a drill bit is lost and can't be recovered, or any number of other situations where the driller feels that he needs to move over and start another well. If you encounter this type of scenario, please be aware drillers do not have the authority to start another well without first obtaining drilling authority for the new well. Please note the following statutes and regulations pertaining to well drilling and construction:

ARIZONA REVISED STATUTE (A.R.S.)

A.R.S. § 45-592.A.

A person may construct, replace or deepen a well in this state only pursuant to this article and section 45-834.01. The drilling of a well may not begin until all requirements of this article and section 45-834.01, as applicable, are met.

***

A.R.S. § 594.A.

The director shall adopt rules establishing construction standards for new wells and replacement wells, the deepening and abandonment of existing wells and the capping of open wells.

***

A.R.S. § 600.A

A well driller shall maintain a complete and accurate log of each well drilled.

ARIZONA ADMINISTRATIVE CODE (A.A.C.)

A.A.C. R12-15-803.A.

A person shall not drill or abandon a well, or cause a well to be drilled or abandoned, in a manner which is not in compliance with A.R.S. Title 45, Chapter 2, Article 10, and the rules adopted thereunder.

***

A.A.C. R12-15-810.A.

A well drilling contractor or single well licensee may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

***

A.A.C. R12-15-816.F.

In the course of drilling a new well, the well may be abandoned without first filing a notice of intent to abandon and without an abandonment card.

*** THIS REQUIREMENT DOES NOT PERTAIN TO THE DRILLING OF MINERAL EXPLORATION, GEOTECHNICAL OR HEAT PUMP BOREHOLES**

Transaction Receipt - Success

Arizona Water Resources
Arizona Water Resources
MID:347501639533
1700 W Washington St
Phoenix , AZ 85012
602-771-8454

01/11/2017 04:20PM
Remittance ID
Arizona011117181536095Ald
Transaction ID:
178069995

KELSEY SHERRARD
500 Maint St
WOODLAND, California 95695
United States
Visa - 3420
Approval Code: 040691

Sale
Amount: $1,800.00

55-226788, 55-226789, 55-226790, 55-226791, 55-226792, 55-226793, 55-226794, 55-226795, 55-226796, 55-226797, 55-226798, 55-226799
N/A
Cash Reciepts
0
palder@azwater.gov

Cardmember acknowledges receipt of goods and/or services in the amount of the total shown hereon and agrees to perform the obligations set forth by the cardmember's agreement with the issuer.

Signature Phone Order

click here to continue.

Printed: 1/11/2017 4:27:39 PM

Arizona Department of Water Resources

1110 West Washington Street, Suite 310
Phoenix AZ 85007

Customer:
KELSEY SHERRARD
500 MAIN STREET
WOODLAND, CA 95695

Receipt #: 17-49315
Office: MAIN OFFICE
Receipt Date: 01/11/2017
Sale Type: Mail
Cashier: WRPXA

Item No.	Function Code	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
8505	122221	4439-6F	MONITOR, PIEZOMETER, AIR SPARGING, SOIL VAPOR EXTR		12	150.00	1,800.00
						RECEIPT TOTAL:	**1,800.00**

Payment type: CREDIT CARD
Amount Paid: $1,800.00
Payment Received Date: 01/11/2017

Authorization 178069995

Notes: Credit card payment for $1,800.00 is for well registration numbers 55-226788, 55-226789, 55-226790, 55-226791, 55-226792, 55-226793, 55-226794, 55-226795, 55-226796, 55-226797, 55-226798, 55-226799

No refund without valid receipt

APPENDIX B

Geophysical Surveys

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M54-LBF
FIELD	FLORENCE COPPER
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: E-LOGS
MORE: NAT. GAMMA
LOCATION
SEC TWP RGE

OTHER SERVICES
COMBO
SONIC

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	2-12-17	TYPE FLUID IN HOLE	MUD
RUN No	2	MUD WEIGHT	N/A
TYPE LOG	E-LOGS-GAMMA	VISCOSITY	N/A
DEPTH-DRILLER	640 FT.	LEVEL	FULL
DEPTH-LOGGER	642 FT.	MAX. REC. TEMP.	30.9 DEG. C
BTM LOGGED INTERVAL	642 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	E. TURNER/M. QUINONES	TOOL STRING/SN	MSI 40 GRP SN 5514
WITNESSED BY	BRANDON - FLORENCE COPPER	LOG TIME:ON SITE/OFF SITE	4:30 A.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	10 5/8 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	2-12-17	**Date**	2-12-17	**Date**	2-12-17		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	COMBO TOOL	**Tool Model**	E-LOG 40GRP	**Tool Model**	MSI 60MM SONIC		
Tool SN	4183	**Tool SN**	5514	**Tool SN**	5001		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	642 FT.	**To**	642 FT.	**To**	642 FT.		
Recorded By	E. TURNER	**Recorded By**	E. TURNER	**Recorded By**	E. TURNER		
Truck No	900	**Truck No**	900	**Truck No**	900		
Operation Check	2-09-17	**Operation Check**	2-09-17	**Operation Check**	2-09-17		
Calibration Check	2-09-17	**Calibration Check**	2-09-17	**Calibration Check**	N/A		
Time Logged	04:55 AM	**Time Logged**	5:35 A.M.	**Time Logged**	6:05 A.M.		
Date		**Date**		**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6	**Run No.**	
Tool Model		**Tool Model**		**Tool Model**		**Tool Model**	
Tool SN		**Tool SN**		**Tool SN**		**Tool SN**	
From		**From**		**From**		**From**	
To		**To**		**To**		**To**	
Recorded By		**Recorded By**		**Recorded By**		**Recorded By**	
Truck No		**Truck No**		**Truck No**		**Truck No**	
Operation Check		**Operation Check**		**Operation Check**		**Operation Check**	
Calibration Check		**Calibration Check**		**Calibration Check**		**Calibration Check**	
Time Logged		**Time Logged**		**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 9 IN. **Calibration Points:** 3.5 IN. & 16 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

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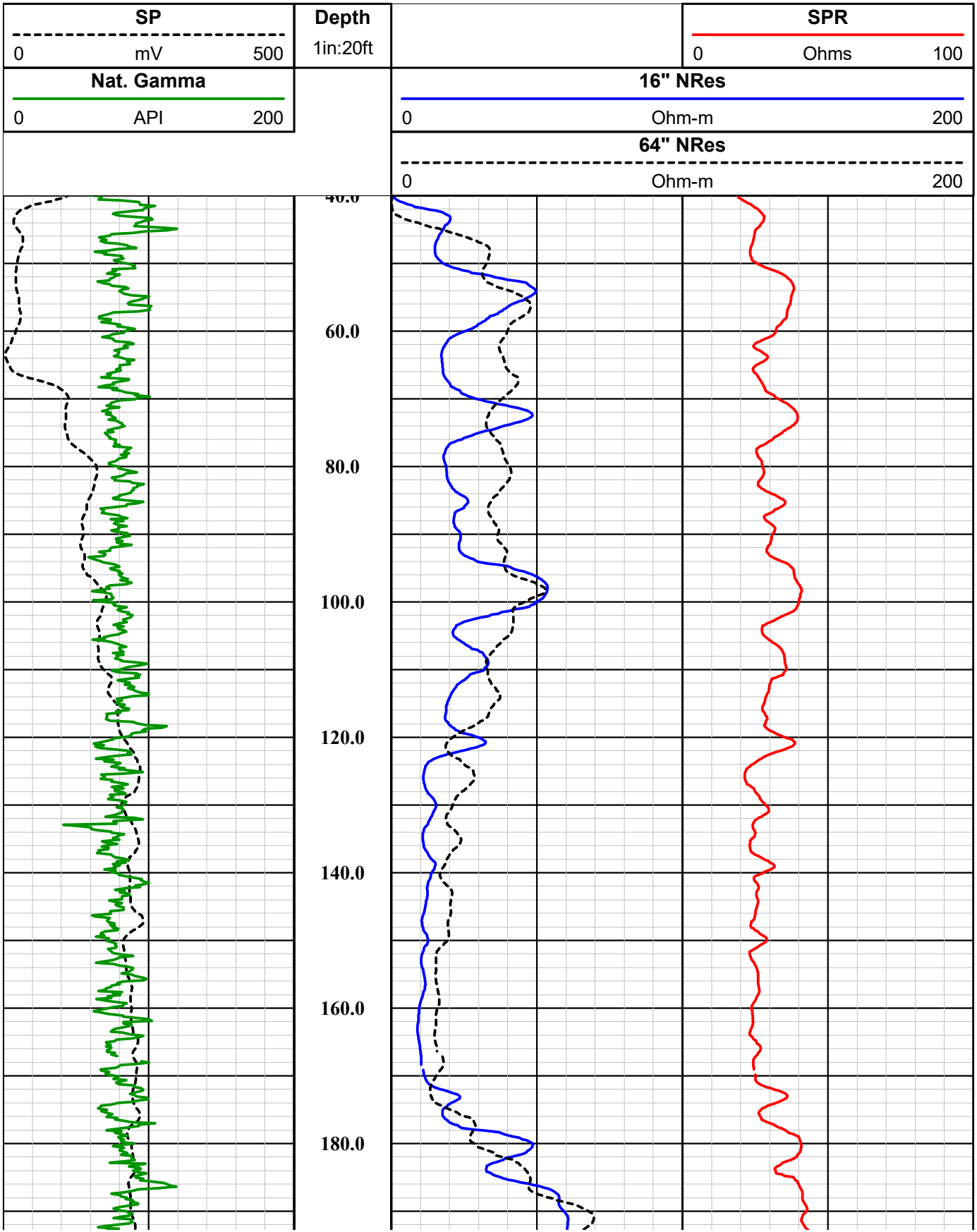

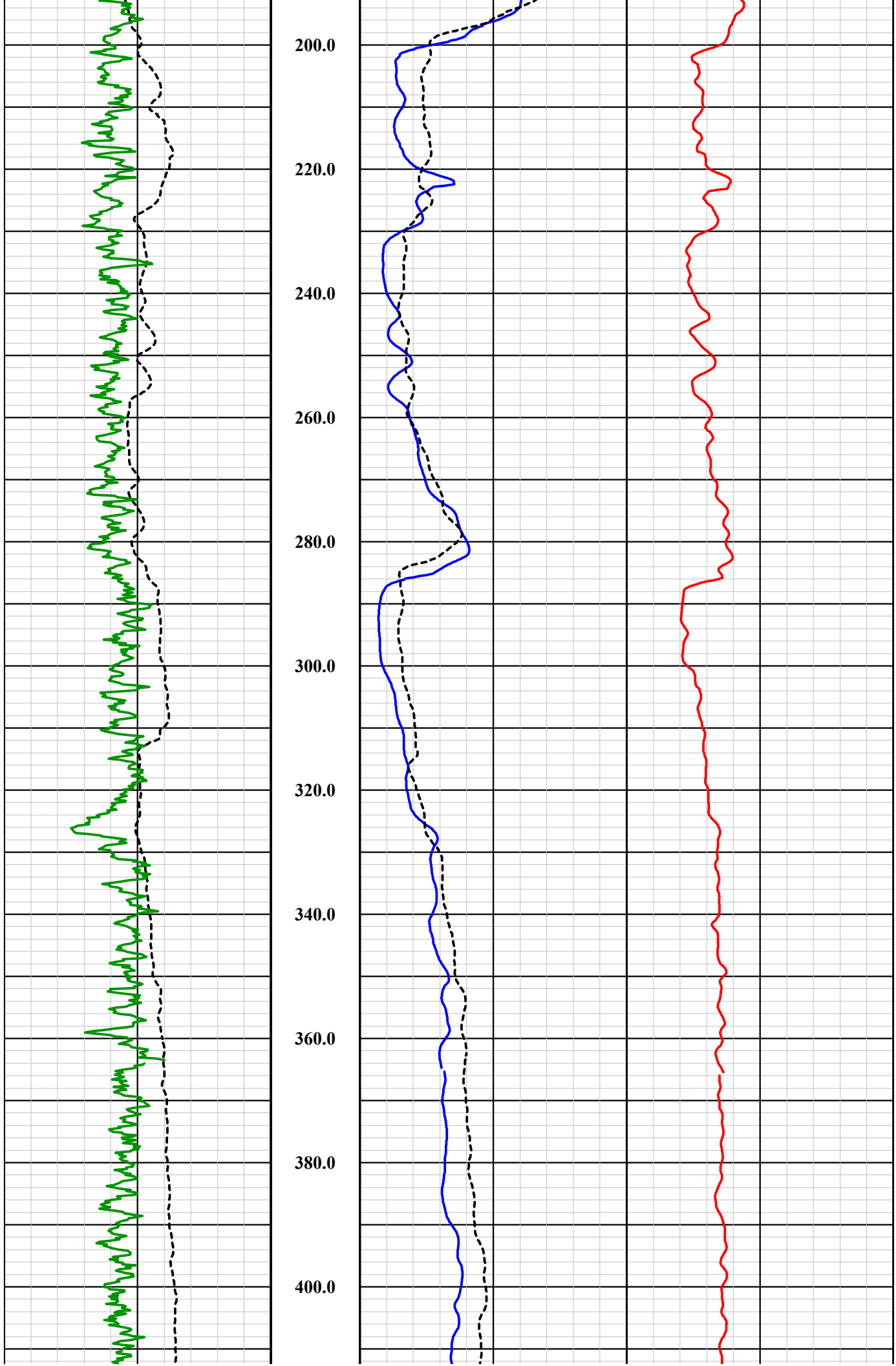
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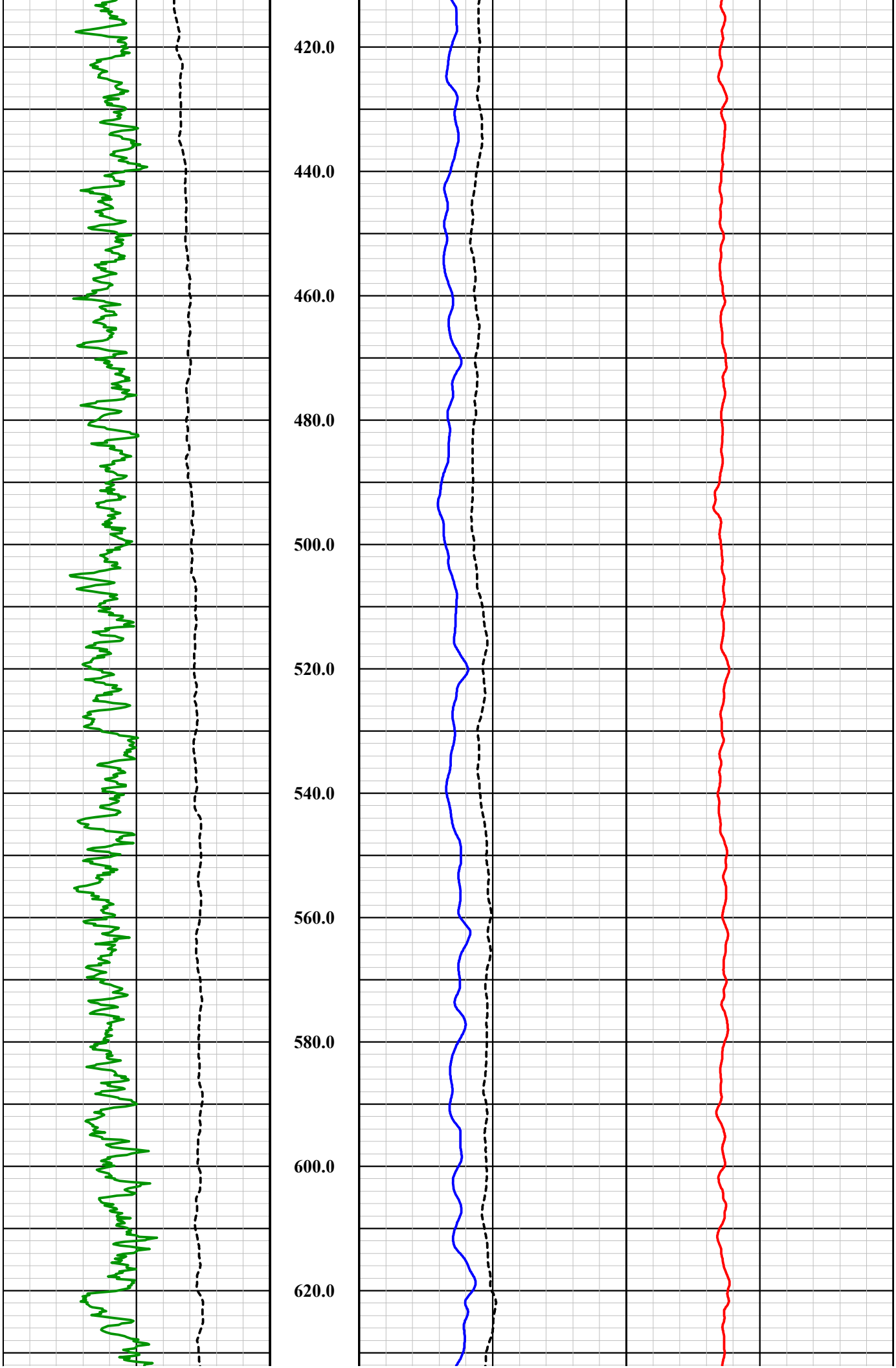
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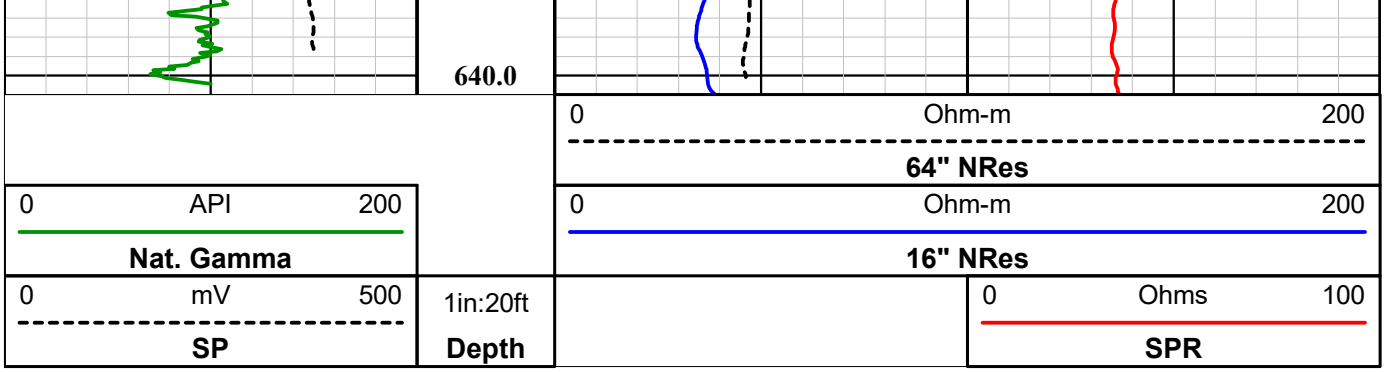

MSI 40 GRP E-Log Tool

Probe Top = Depth Ref.

Tool SN: 5019, 5513, & 5514

Four Conductor MSI Probe Top

Bridle connects to wireline cablehead: Wireline armor is the B Electrode.

Bridle Electrode (N Electrode)

Probe Length = 1.98 m or 6.5 ft
Bridle Length = 7.88 m or 25.86 ft

Probe Weight = 7.3 kg or 16.0 lbs

Can only be collected in fluid

Isolation Bridle

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

64" Normal Resistivity Electrode/Spontaneous Potential Electrode (M Electrode)

Electrode Measuring Points (from bottom of probe)

- **Spontaneous Potential (SP): 1.777 m or 5.81 ft**
- **16" Normal Resistivity (16" NRes): 0.3548 m or 1.16 ft**
- **64" Normal Resistivity (64" NRes): 0.9644 m or 3.16 ft**
- **Single Point Resistance (SPR): 0.152 m or 0.50 ft**
- **Natural Gamma Ray (Nat. Gamma): 0.73 m or 2.39 ft**

Natural Gamma Ray

16" Normal Resistivity Electrode (M Electrode)

Current Electrode/Single Point Resistance Electrode (A Electrode)

1.63" or 40 mm Diameter (41.4 mm with neoprene heat shrink and electrical tape)

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	FLORENCE COPPER
Well	M54-LBF
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Preliminary ELOG Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M54-LBF
FIELD	FLORENCE COPPER
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: GAMMA - CALIPER
MORE: TEMP. / FLUID RES.

LOCATION

SEC TWP RGE

OTHER SERVICES
E-LOGS
SONIC

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	2-12-17	TYPE FLUID IN HOLE	MUD
RUN No	1	MUD WEIGHT	N/A
TYPE LOG	GAMMA - CALIPER - TFR	VISCOSITY	N/A
DEPTH-DRILLER	640 FT.	LEVEL	FULL
DEPTH-LOGGER	642 FT.	MAX. REC. TEMP.	30.9 DEG. C
BTM LOGGED INTERVAL	642 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.1 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	E. TURNER/M. QUINONES	TOOL STRING/SN	MSI COMBO TOOL 4183
WITNESSED BY	BRANDON - FLORENCE COPPER	LOG TIME:ON SITE/OFF SITE	4:30 A.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	10 5/8 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	2-12-17	**Date**	2-12-17	**Date**	2-12-17		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	COMBO TOOL	**Tool Model**	E-LOG 40GRP	**Tool Model**	MSI 60MM SONIC		
Tool SN	4183	**Tool SN**	5514	**Tool SN**	5001		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	642 FT.	**To**	642 FT.	**To**	642 FT.		
Recorded By	E. TURNER	**Recorded By**	E. TURNER	**Recorded By**	E. TURNER		
Truck No	900	**Truck No**	900	**Truck No**	900		
Operation Check	2-09-17	**Operation Check**	2-09-17	**Operation Check**	2-09-17		
Calibration Check	2-09-17	**Calibration Check**	2-09-17	**Calibration Check**	N/A		
Time Logged	04:55 AM	**Time Logged**	5:35 A.M.	**Time Logged**	6:05 A.M.		

Date		**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model		**Tool Model**		**Tool Model**			
Tool SN		**Tool SN**		**Tool SN**			
From		**From**		**From**			
To		**To**		**To**			
Recorded By		**Recorded By**		**Recorded By**			
Truck No		**Truck No**		**Truck No**			
Operation Check		**Operation Check**		**Operation Check**			
Calibration Check		**Calibration Check**		**Calibration Check**			
Time Logged		**Time Logged**		**Time Logged**			

Additional Comments:

Caliper Arms Used: 9 IN. **Calibration Points:** 3.5 IN. & 16 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

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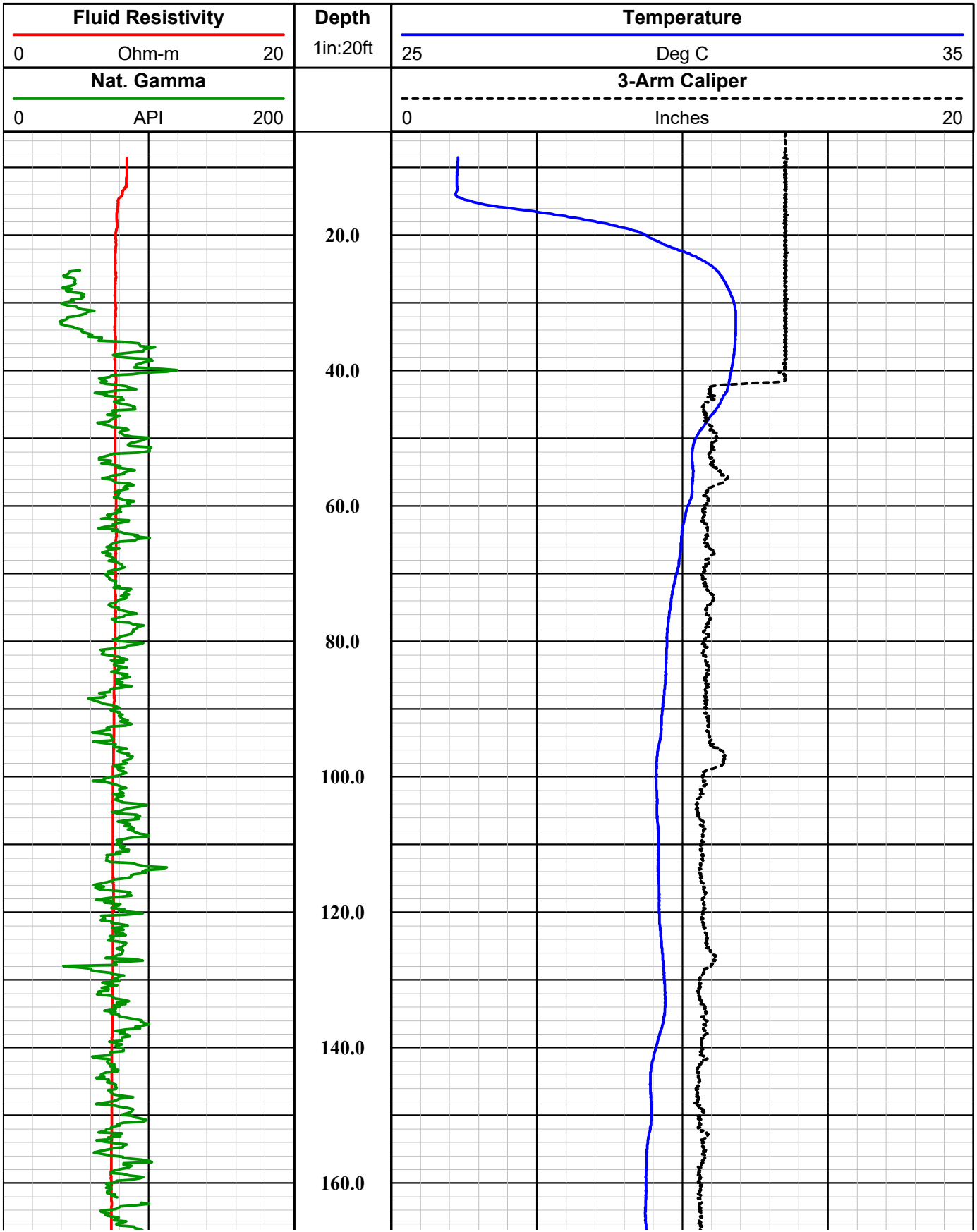

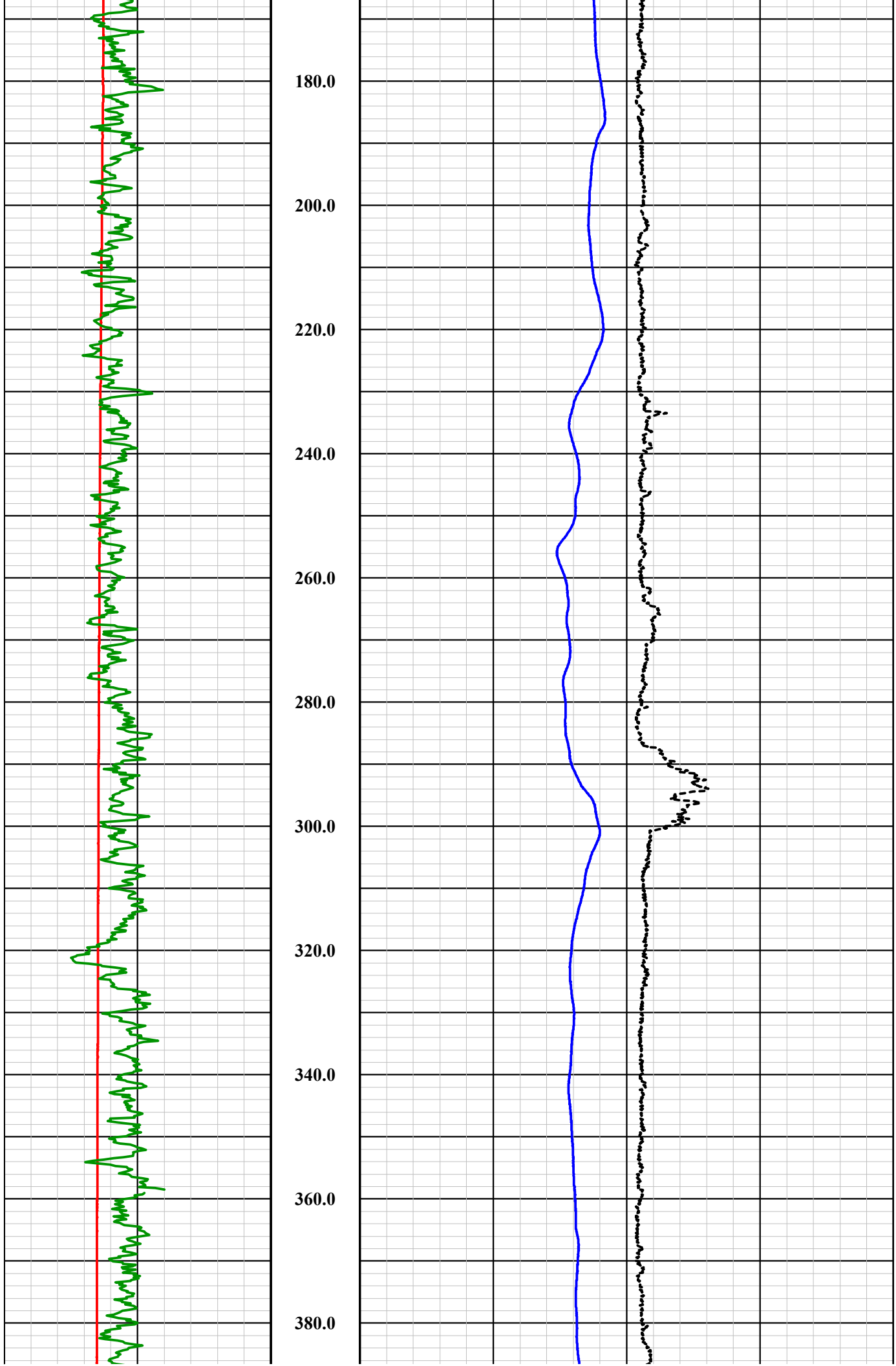
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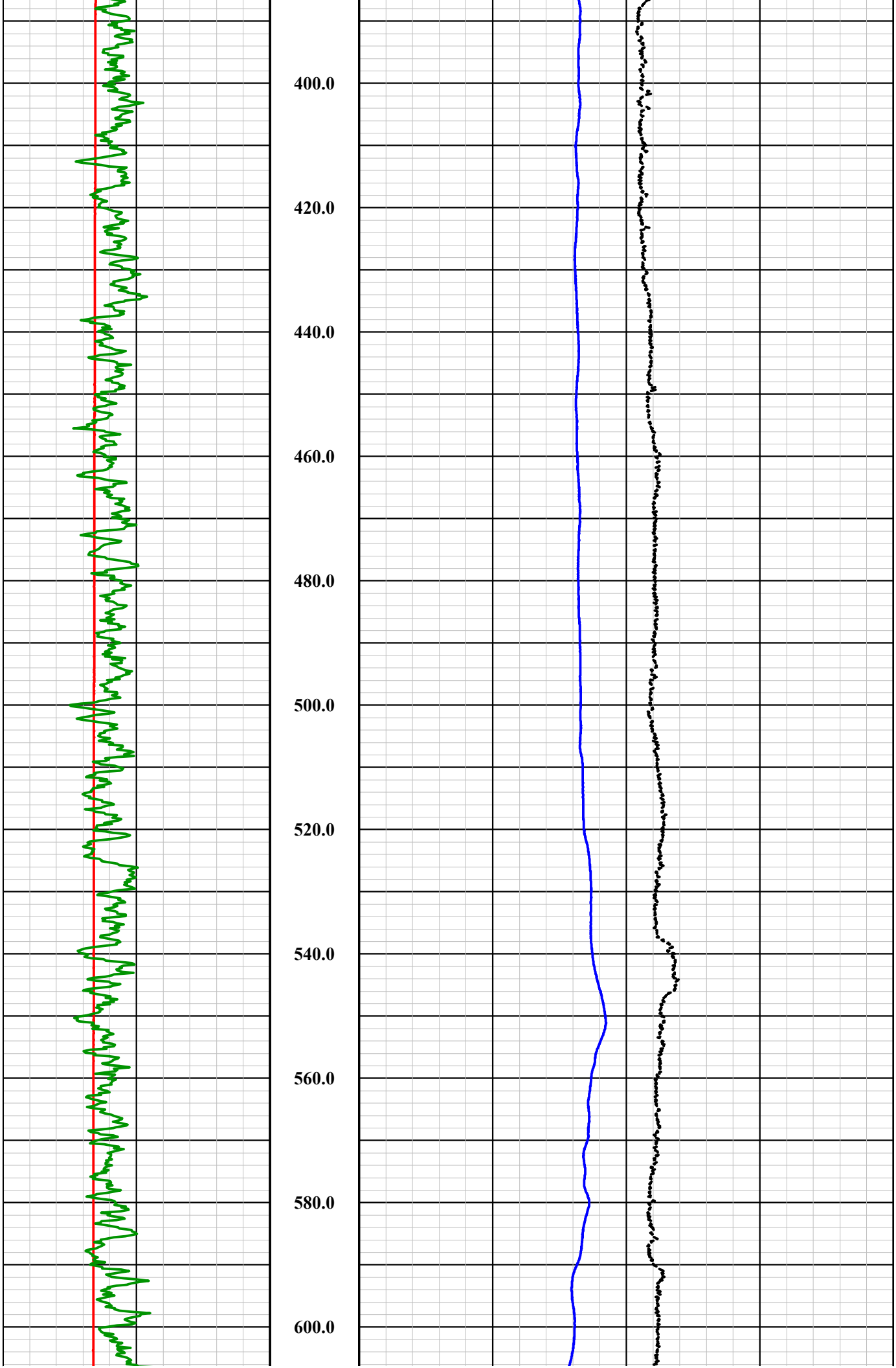
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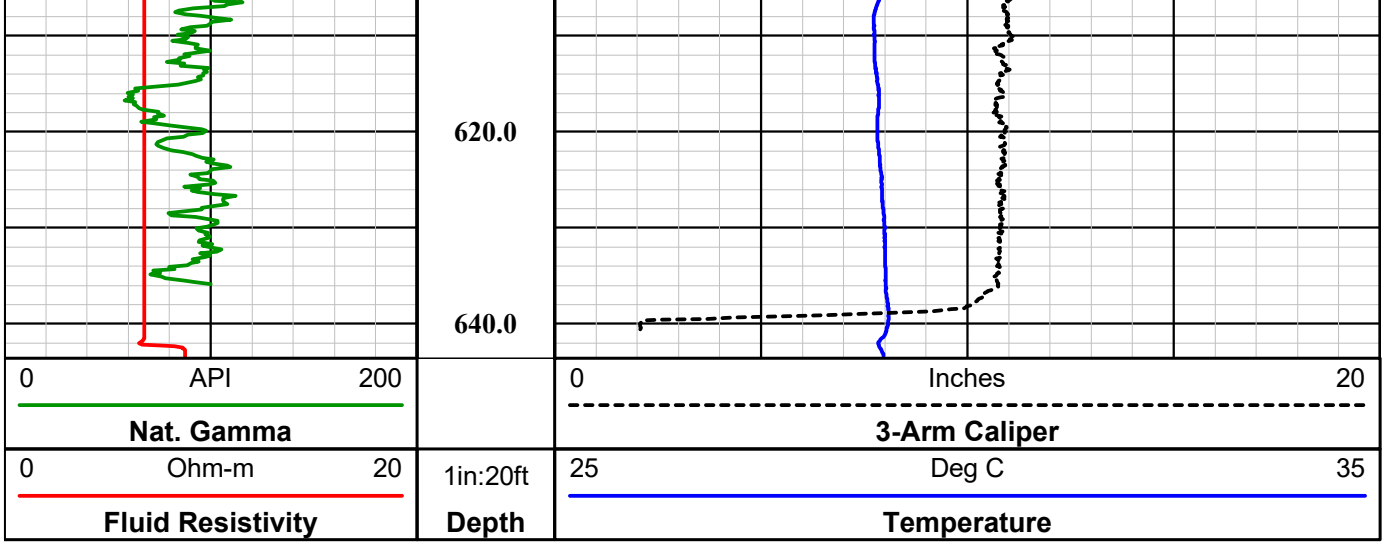

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	FLORENCE COPPER
Well	M54-LBF
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Preliminary GCT Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M54-LBF
FIELD	FLORENCE COPPER
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: 60MM SONIC
MORE: NAT. GAM-CALIPER

OTHER SERVICES
E-LOGS
COMBO

LOCATION

SEC TWP RGE

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	2-12-17	TYPE FLUID IN HOLE	MUD
RUN No	1/3	MUD WEIGHT	N/A
TYPE LOG	SONIC-GAM - CAL	VISCOSITY	N/A
DEPTH-DRILLER	640 FT.	LEVEL	FULL
DEPTH-LOGGER	642 FT.	MAX. REC. TEMP.	30.9 DEG. C
BTM LOGGED INTERVAL	642 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.25 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	E. TURNER/M. QUINONES	TOOL STRING/SN	MSI 60MM SONIC SN 5001
WITNESSED BY	BRANDON - FLORENCE COPPER	LOG TIME:ON SITE/OFF SITE	4:30 A.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	10 5/8 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	2-12-17	**Date**	2-12-17	**Date**	2-12-17		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	COMBO TOOL	**Tool Model**	E-LOG 40GRP	**Tool Model**	MSI 60MM SONIC		
Tool SN	4183	**Tool SN**	5514	**Tool SN**	5001		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	642 FT.	**To**	642 FT.	**To**	642 FT.		
Recorded By	E. TURNER	**Recorded By**	E. TURNER	**Recorded By**	E. TURNER		
Truck No	900	**Truck No**	900	**Truck No**	900		
Operation Check	2-09-17	**Operation Check**	2-09-17	**Operation Check**	2-09-17		
Calibration Check	2-09-17	**Calibration Check**	2-09-17	**Calibration Check**	N/A		
Time Logged	04:55 AM	**Time Logged**	5:35 A.M.	**Time Logged**	6:05 A.M.		
Date		**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model		**Tool Model**		**Tool Model**			
Tool SN		**Tool SN**		**Tool SN**			
From		**From**		**From**			
To		**To**		**To**			
Recorded By		**Recorded By**		**Recorded By**			
Truck No		**Truck No**		**Truck No**			
Operation Check		**Operation Check**		**Operation Check**			
Calibration Check		**Calibration Check**		**Calibration Check**			
Time Logged		**Time Logged**		**Time Logged**			

Additional Comments:

Caliper Arms Used: 9 IN. **Calibration Points:** 3.5 IN. & 16 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

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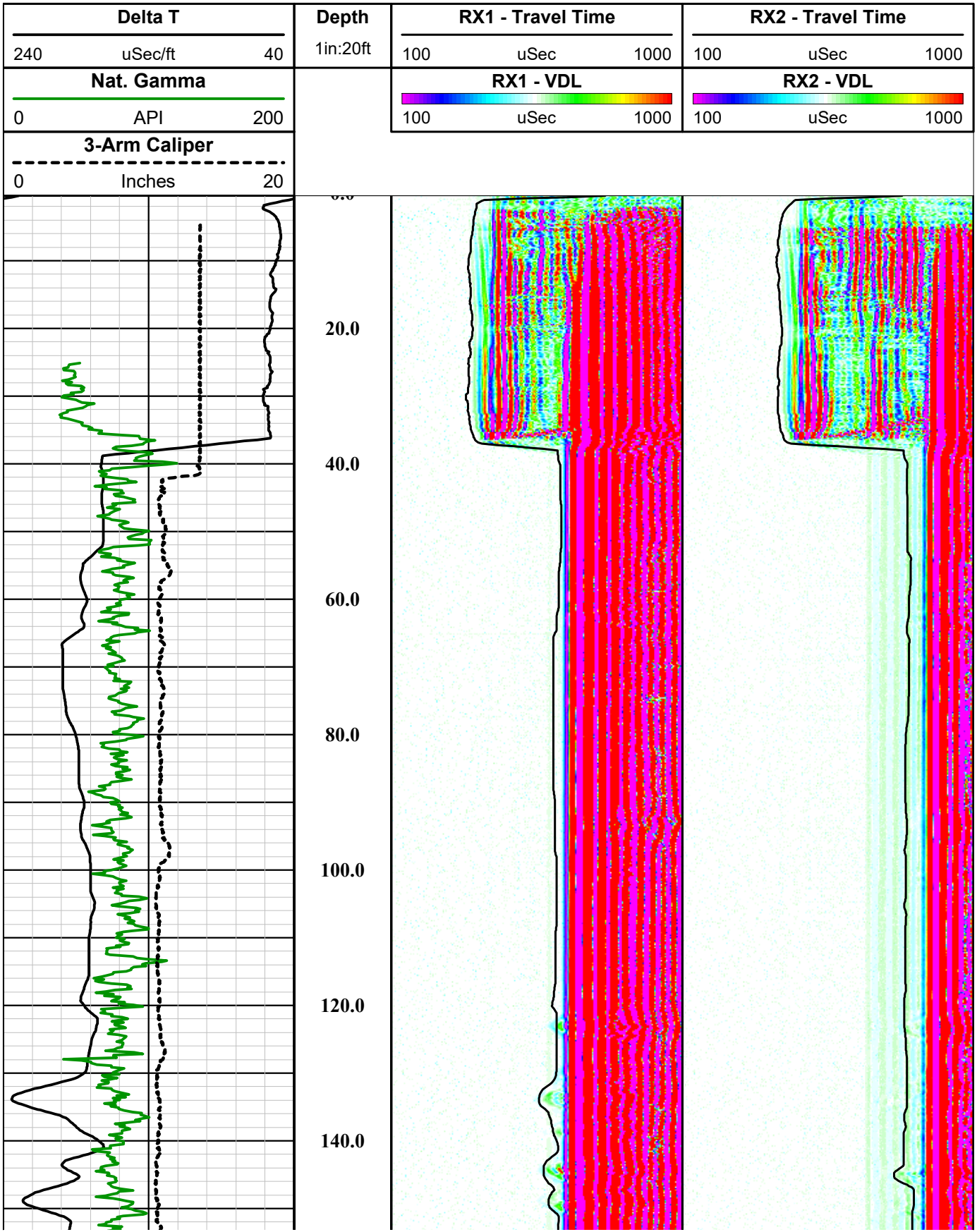

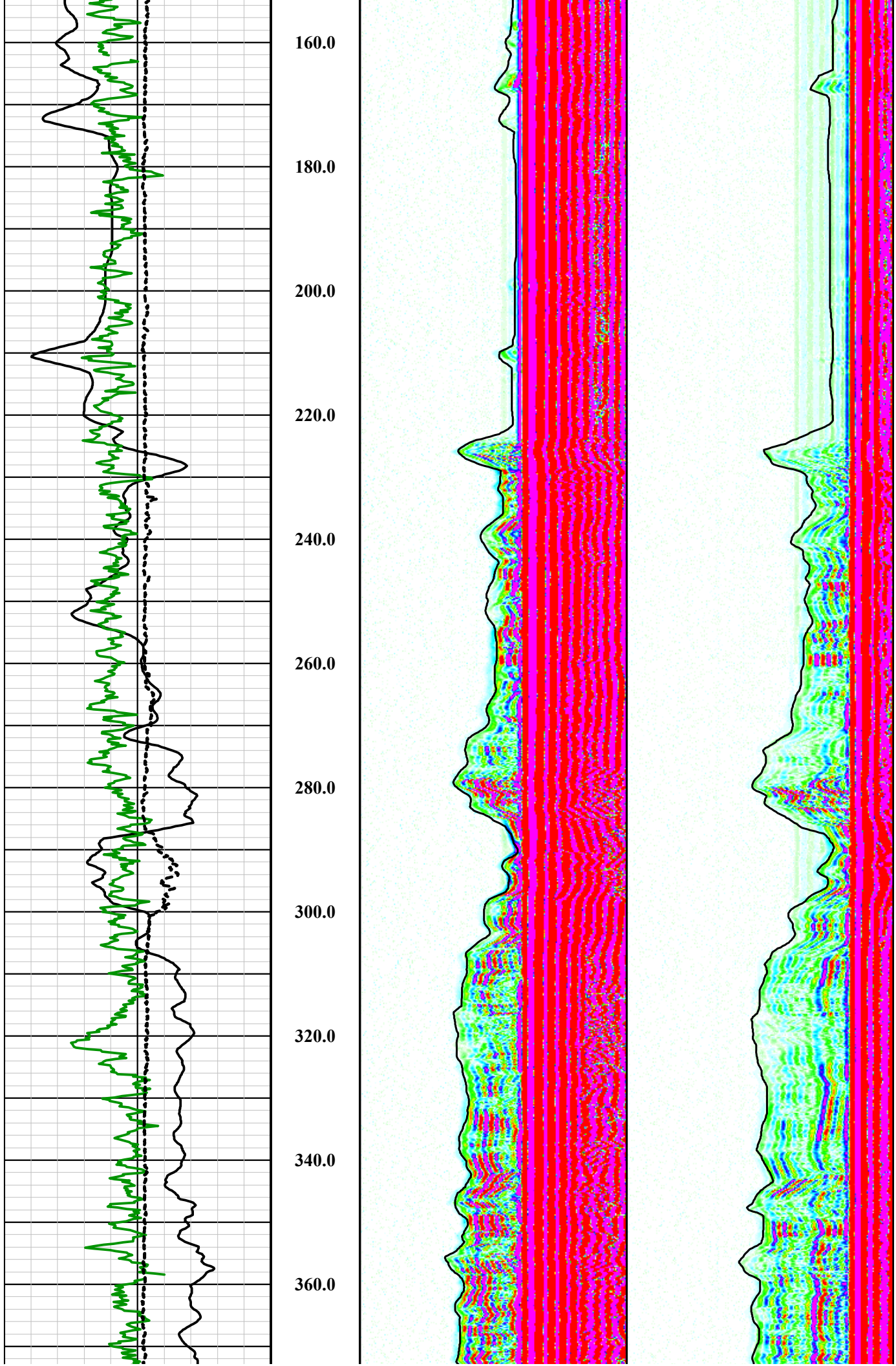
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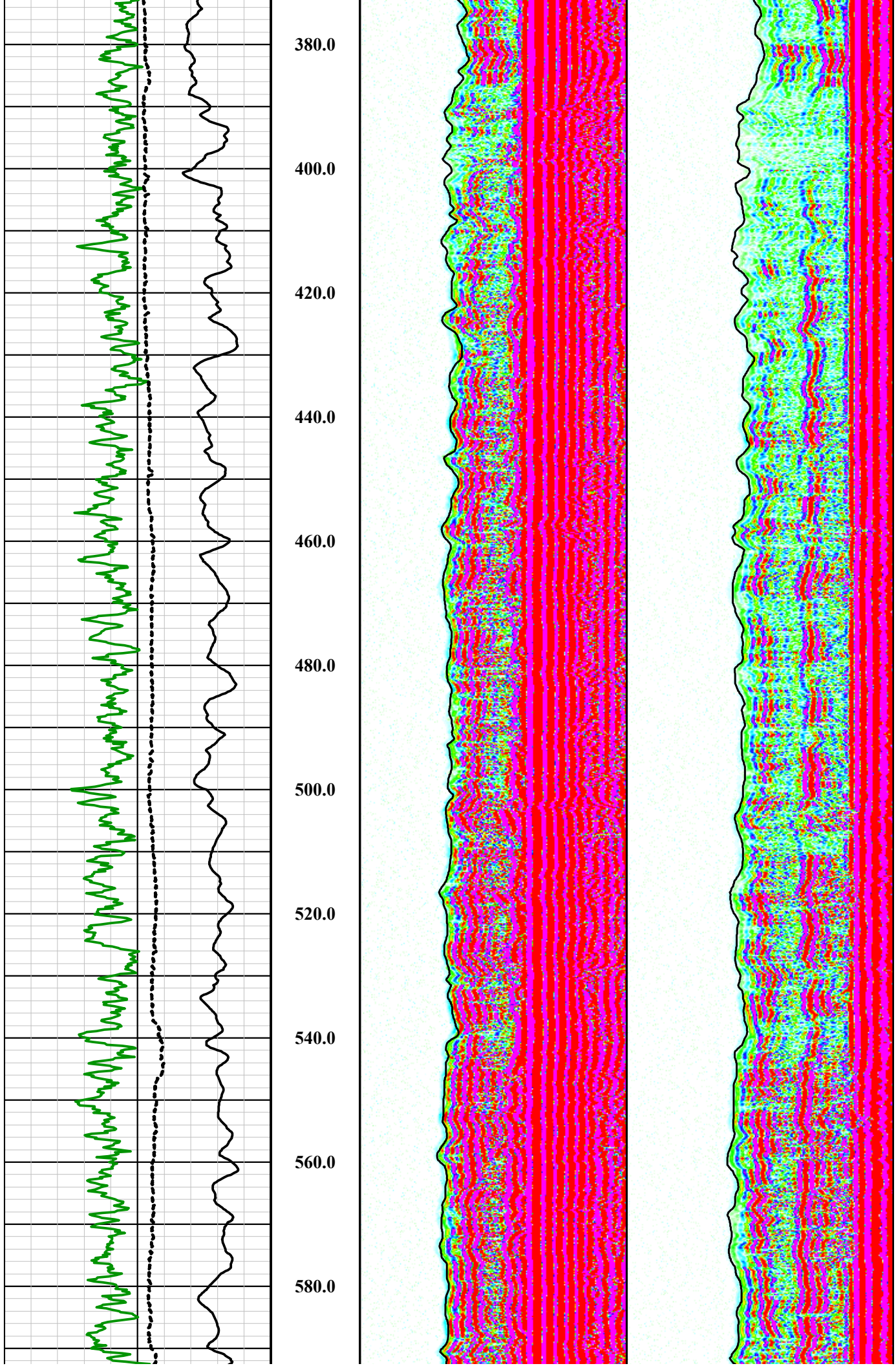
320.0
340.0
360.0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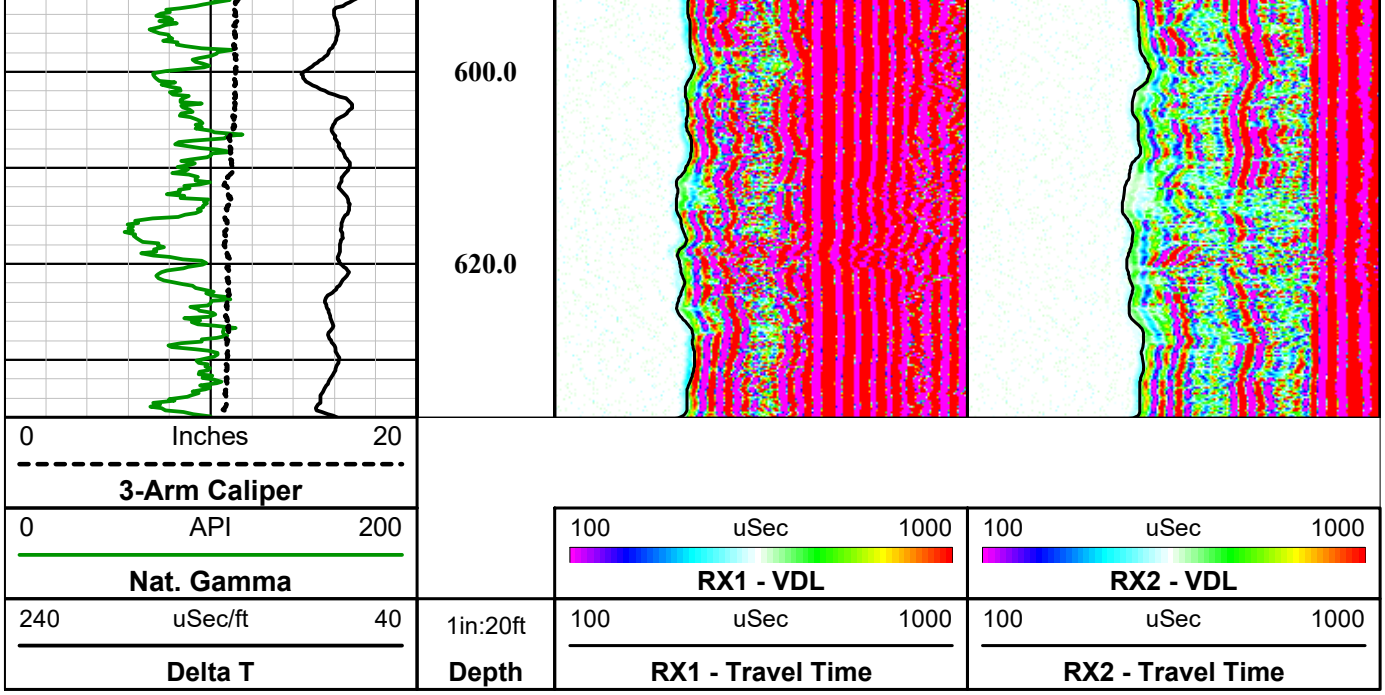


MSI 60 mm 2 RX Full Waveform Sonic Tool

Probe Top = Depth Ref.

Tool SN: 6001 & 6002

Four Conductor MSI Probe Top

Probe Length = 2.8 m or 9.19 ft
Probe Weight = ~26.5 kg or 58.4 lbs

Sensors: Ceramic Piezoelectric

Transmitter Frequency: 24 - 28 kHz resonant frequency

Rx - Rx Spacing: 0.3 m (12.0 in)

Typically centralized with external centralizers

Can only be collected in fluid

Temperature Rating: 80 Deg C (176 Deg F)
Presure Rating: 200 bar (2900 psi)

Rx-2 **Tx - Rx2 Spacing = 1.22 m (48.0 in)**

Rx-1 **Tx - Rx1 Spacing = .91 m (36.0 in)**

Acoustic Isolater

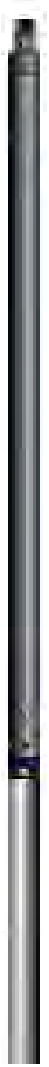
Tx = Acoustic Transmitter

0.660 m or 26.0 in. - End of tool to center of Tx

2.36 in or 60 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	FLORENCE COPPER
Well	M54-LBF
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Preliminary SONIC Summary

APPENDIX C

Lithologic Log

LITHOLOGIC LOG

M54-LBF

Project	Production Test Facility, Florence, Arizona		File No. 129687
Client	Florence Copper, Inc.		Sheet No. 1 of 8
Contractor	Cascade Drilling LLC		Cadastral Location D (4-9) 28 CBA
Drilling Method	Reverse Rotary	Land Surface Elevation	feet, amsl
Borehole Diameter(s)	17.5/10.75 in.	Datum	State Plane NAD 83
Rig Make & Model	Schramm T685WS	Location	
Start	8 February 2018		
Finish	11 February 2018		
H&A Rep.	C. Price		

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
0		SP-SM		**POORLY GRADED SAND with SILT (0-10 feet)** Primarily fine sand with ~10% fines and trace gravel to 3 mm. Sand and gravel are subrounded. Fines are nonplastic, have low toughness, are light reddish brown, and have a weak reaction to HCL. **UBFU**	
5					**Well Registry ID:** 55-226792 **Surface Completion:** Locking Well Vault & Concrete Pad **Well casing stickup:** 1.7 feet als
10		SP	10	**POORLY GRADED SAND (10-20 feet)** Primarily medium sand with ~5% fines and ~5% gravel to 8 mm. Sand and gravel are subrounded. Fines are nonplastic, have low toughness, are reddish brown, and have a weak HCL reaction. **UBFU**	
15					
20		SW	20	**WELL GRADED SAND with GRAVEL (20-25 feet)** Primarily fine to coarse sand with ~5% fines and ~30% gravel to 8 mm. Sand is subangular, gravel is subangular to angular. Fines have medium plasticity, low toughness, are reddish brown, and have no reaction to HCL. **UBFU**	
25		SW-SM	25	**WELL GRADED SAND with SILT (25-60 feet)** Primarily medium to coarse sand with ~10% fines and ~5% gravel to 6 mm. Sand and gravel are subangular. Fines are nonplastic, have low toughness, are reddish brown, and have a weak reaction to HCL. **UBFU**	
30					**Surface Casing:** 14-inch mild steel; 0 - 40 feet **Well Casing:** Nominal 5-inch diameter Mild Steel; 0 - 310 feet
35					
40					
45					
50					
55					
60		SP	60	**POORLY GRADED SAND with GRAVEL (60-125 feet)** Primarily coarse sand with ~5% fines and ~35% gravel to 16 mm. Sand and gravel are angular. Fines are nonplastic, have low toughness, are reddish brown, and have a strong reaction to HCL reaction. **UBFU**	**Unit Intervals:** UBFU: 0 - 287 feet MGFU: 287 - 300 feet LBFU: 300 - 640 feet
65					
70					
75					

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

M54-LBF

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
75				
80				
85				
90				
95				
100				
105				
110				
115				
120				
125		SC	125	**CLAYEY SAND (125-145 feet)** Primarily medium to coarse sand with ~15% fines and ~5% gravel to 10 mm. Sand and gravel are subangular. Fines have high plasticity, high toughness, are reddish brown, and have a weak reaction to HCL. **UBFU**
130				
135				
140				
145		CH	145	**SANDY FAT CLAY (145-160 feet)** Primarily fines with ~45% sand and trace gravel to 6mm. Sand and gravel are subrounded. Fines have high plasticity, medium toughness, very high dry strength, are reddish brown, and have a weak reaction to HCL. **UBFU**
150				
155				
160		SC	160	**CLAYEY SAND (160-230 feet)** Primarily fine to coarse sand with ~20% fines and

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	
165				~5% gravel to 12 mm. Sand is subrounded, gravel is subangular. Fines have medium plasticity, medium toughness, are reddish brown, and have a weak reaction to HCL. **UBFU**	
170					
175					
180					
185					
190					
195					
200					**Seal:** Type V neat cement; 0 - 285 feet Fine Sand & Bentonite; 285 - 300 feet
205					
210					
215					
220					
225					
230		CH	230	**SANDY FAT CLAY (230-245 feet)** Primarily fines with ~40% sand and trace gravel to 5 mm. Sand and gravel are subrounded. Fines have high plasticity, medium toughness, very high dry strength, are reddish brown, and have a strong reaction to HCL. **UBFU**	
235					
240					
245		SP-SM	245	**POORLY GRADED SAND with SILT and GRAVEL (245-287 feet)** Primarily medium to coarse sand with ~10% fines and ~20% gravel to 14 mm. Sand is subangular, gravel is angular. Fines have low plasticity, low toughness, are reddish brown, and have a strong	

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	
250				reaction to HCL. **UBFU**	
255					
260					
265					
270					
275					
280					
285					
		CH	287	**FAT CLAY (287-300 feet)** Primarily fines with high plasticity. **MFGU**	
290					
295					
300		SP	300	**POORLY GRADED SAND with GRAVEL (300-330 feet)** Primarily medium to coarse sand with ~5% fines and ~30% gravel to 6mm. Sand and gravel is angular. Fines are reddish brown and have a strong reaction to HCL. **LBFU**	
305					**Filter Pack:** 8 - 12 CO Silica Sand; 300 - 640 feet
310					**Thread Adapter:** Stainless Steel, SCH 80 F480 PVC to SCH 40 F480 Mild Steel: 310 feet
315					**Well Screen:** Nominal 5-inch diameter, SCH 80 PVC Screen (0.020-inch slots); 310 - 630 feet
320					
325					
330		GP-GM	330	**POORLY GRADED GRAVEL with SILT and SAND (330-420 feet)** Primarily gravel to 10 mm with ~10% fines and ~40% sands. Sand and gravel is angular. Fines have low plasticity, low toughness, are brown, and have a strong reaction to HCL. **LBFU**	
335					

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
340				
345				
350				
355				
360				
365				
370				
375				
380				
385				
390				
395				
400				
405				
410				
415				
420		SC	420	**CLAYEY SAND with GRAVEL (420-475 feet)** Primarily fine to coarse sand with ~15% fines and ~20% gravels to 8 mm. Sand and gravel is subangular. Fines have medium

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
				plasticity, low toughness, are brown, and have a strong reaction to HCL. **LBFU**
425				
430				
435				
440				
445				
450				
455				
460				
465				
470				
475		SC	475	**CLAYEY SAND with GRAVEL (475-525 feet)** Primarily medium to coarse sand with ~15% fines and ~25% gravels to 8 mm. Sand and gravel is subangular. Fines have medium plasticity, low toughness, are brown, and have a strong reaction to HCL. **LBFU**
480				
485				
490				
495				
500				
505				

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
510				
515				
520				
525		SP-SM	525	**POORLY GRADED SAND with SILT (525-570 feet)** Primarily medium to coarse sand with ~10% fines and ~5% gravel to 6 mm. Sand is subangular, gravel is angular. Fines are nonplastic, have low toughness, are brown, and have a strong reaction to HCL. **LBFU**
530				
535				
540				
545				
550				
555				
560				
565				
570		GW-GM	570	**WELL GRADED GRAVEL with SILT and SAND (570-590 feet)** Primarily gravel to 6 mm with ~40% sand and ~10% fines. Sand and gravel is angular. Fines are nonplastic, have low toughness, are brown, and have a strong reaction to HCL. **LBFU**
575				
580				
585				
590		SC	590	**CLAYEY SAND (590-640 feet)** Primarily fine to coarse sand with ~20% fines and ~5% gravel to 4 mm. Sand and gravel is angular. Fines have high plasticity, medium toughness, are brown, and have a strong reaction to HCL. **LBFU**
595				

HALEY ALDRICH

LITHOLOGIC LOG

M54-LBF

File No. 129687
Sheet No. 8 of 8

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	
600					
605					
610					
615					
620					
625					
630					
635					
640			640		**Total Borehole Depth:** Driller = 640 feet; Geophysical Logging = 642 feet

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

M54-LBF

APPENDIX D

Well Completion Forms

PIPE TALLY

Project Name.:	FCI	Project No.:	
Well No.:	MS4-LBF	Date:	2-12-17
Location:		Pipe Talley for:	well install
Total Depth:	640'	Geologist:	C Price

Type of Connections: ☐ Welded ☐ T+C ☒ Flush Thread ☐ Other

Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type	Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type
1 (cap→)	✓	0.52	0.52	~~PVC screen~~					cap PVC
2 (screen→)	✗	20.00	20.52	PVC screen					
3	✓	20.00	40.52						
4	✗	19.99	60.51		31	✓	19.99	551.69	
5	✓	20.00	80.51		32	✓	19.99	601.68	
6	✗	19.99	100.50		33	✗	19.99	621.67	
7	✓	20.00	120.50		34	✓	10.00	631.67	
8	✗	20.01	140.51						
9	✓	20.00	160.51						
10	✗	19.99	180.50						
11	✓	20.00	200.50						
12	✗	19.99	220.49						
13	✓	20.00	240.49						
14	✗	19.99	260.48						
15	✓	20.00	280.48						
16	✗	19.99	300.47						
17	✓	20.00	320.47						
18	✗	1.28	321.75	PVC/steel adapter					
19	✓	20.00	341.75						
20	✓	20.00	361.75						
21	✗	20.00	381.75						
22	✓	20.00	401.75						
23	✓	19.99	421.74						
24	✗	20.01	441.75						
25	✓	19.99	461.74						
26	✓	19.99	481.73						
27	✗	19.99	501.72						
28	✓	19.99	521.71						
29	✓	19.99	541.70						
30	✗	20.00	561.70						

SUMMARY OF TALLY

Total Length tallied:	631.67
Casing Stick-Up:	1.67
Length of Casing Cut-Off:	0
Bottom of Well:	630.00
Screened Interval:	630.00 - 309.53
Total Screen in Hole:	320.47

Notes:

32 - 20' tramie pieces

5" SCH 80

Screen - PVC 0.020 slot

PVC end cap

Riser - Mild steel

PVC → ~~Rise~~ Steel adapter

✗ = centralizers @ bottom of joint marked

HALEY ALDRICH

ESTIMATED ANNULAR MATERIAL RECORD

Project Name: FCI **Project #.:** 129657-002 **Date:** 2-17-17
Well No.: M54-LBF **Geologist:** C Price

ANNULAR VOLUME CALCULATIONS

Total Depth of Borehole [T]:	640 feet	Total Cased Depth:	1200 feet
Borehole Diameter [D]:	10.625 inches	Rat Hole Volume [R=(D^2) 0.005454*L_r]:	6.2 Ft^3
Screen Length [L_s]:	320.47 feet	Rat Hole Length [L_r]	10' ~~6.2~~ feet
Screen Diameter [d_s]:	5 5/8 inches	Camera Tube Length [L_{ct}]	— feet
Casing Length [L_c]	309.53 feet	Camera Tube Diameter [d_{ct}]	— inches
Casing Diameter [d_c]	5 5/8 inches		

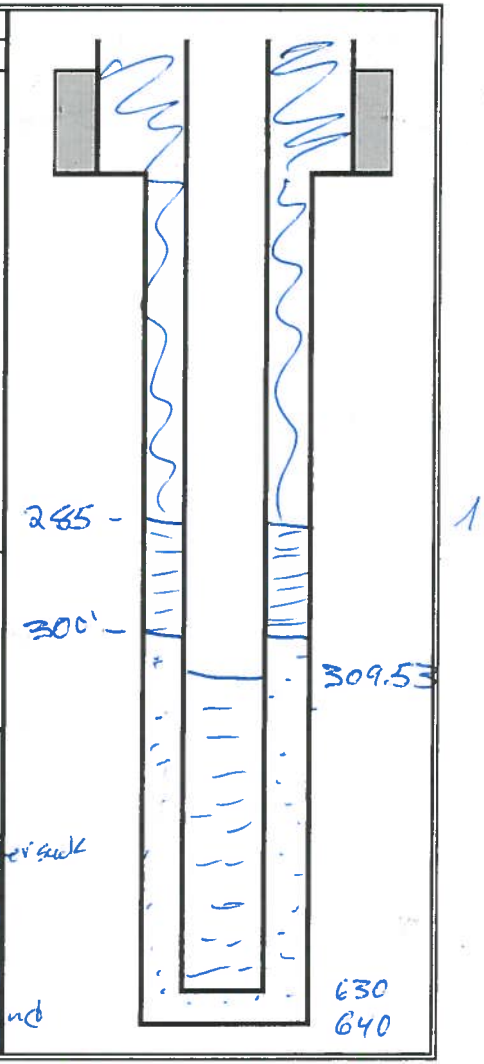
Screen Annular Volume (A_s): (D^2-d_s^2) 0.005454 = 0.44 Ft^3/Lin. Ft
Casing Annular Volume (A_c): (D^2-d_c^2) 0.005454 = 0.44 Ft^3/Lin. Ft
Casing/Cam.Tube Annular Volume (A_{c+ct}): (D^2-d_c^2-d_{ct}^2) 0.005454 = — Ft^3/Lin. Ft

EQUATIONS

2,700 lbs. Silica Sand = 1 cubic yard = 27 cubic feet
Bentonite Sack = 0.69 ft^3
[1] Volume of bag (Ft^3) = bag weight/100
Silica Sand Super Sack = 3000 lbs.
[2] Calculated depth = Previous Calculated depth - (v/A)

No.	✓	Weight of Bag (lbs.)	Volume of Bag[1] (v) (ft^3)	Total Vol. of Bags (ft^3)	Calculated Depth[2] (ft bls)	Tagged Depth (ft bls)	Comments Tremie depth	
1	✓	3000	30	30	576	565	640-560	1-5x12 sand super sack
2	✓	3000	30	60	497.8	—	400	"
3	✓	3000	30	90	428.6	~~420~~ 439	400	"
4	✓	3000	30	120	371		280	"
5	✓	3000	30	150	303	302	280	"
6	✓	10 gal	1.4	151.4	299	299	280	2-5 gal + 2 sand after swab
						306		

Tag probe = 7.7'



HALEY ALDRICH

ESTIMATED ANNULAR MATERIAL RECORD (Continued)

Project Name: FCI **Project No.:** 129687-002 **Geologist:** C Price

Well No.: M54-LBF **Date:** 2-12-17

No.	✓	Weight of Bag (lbs.)	Volume of Bag[1](v) (ft^3)	Total Vol. of Bags (ft^3)	Calculated Depth[2] (ft bls)	Tagged Depth (ft bls)	Comments
7	✓	25 gal	3.3	154.7	298.5	300	5-5 gal buckets sand tremie @ 280
8	✓	40 gal	5.4	160.1	287.7	285	8-5 gal pell plug tremie @ 280
9	✓	~1000 gal	133.7	293.8	-18.9	@	117 bags of cement, cement grout

Notes: Cement grout - 3 batches of ≈ 342 gal.
1 batch = 39 bags cement, type V w/225 gal water.

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name:	Project No.:
Well No.: MS4-LB4	Date/Time Started: 2/15/17
Total Depth of Well (ft bls): 230' bgs	Screen Interval (ft bls):
How Q Measured: bucket + watch	H&A Personnel: J. Anderson

~~# Bail~~ Time	Discharge ~~(gals)~~ gpm	Cumulative ~~Volume (gals)~~ (sand mg/L)	Water Level (ft, bls)	Turbidity NTU	Temp (°C)	Sp. Cond. (µS/cm)	pH (SU)	Comment
1100			226.61					from plate, static
1117	19	10.0	228.3	150	23.07	1310	7.53	pump on, cloudy floc + sand
1137	20	trace	228.49	16.8	22.95	1457	7.30	slightly cloudy
1157	20		228.45	7.15	23.46	1448	7.26	clear
1202		pump off	off, surge					
1212	20		228.29	5.63	23.38	1450	7.31	pump on, slightly cloudy
			~~228.4~~					
1232	20		~~227.4~~	4.44				clear, aerated
1235		pump	off, surge					
1245	20	pump	on		~~23.64~~	~~1460~~		
1255	20	0	228.38	3.12	23.64	1460	7.32	clear, aerated
1305		Finish pumping						
1325		pump	on				7.09	
1327				~~33.6~~	23.81	1440	~~6.04~~	slightly cloudy
1332	20	0		4.57	23.68	1465	7.08	clear, aerated
1340	20	0		3.64	23.47	1460	7.13	
1350	20	0		2.14	23.35	1459	7.16	
1400	20			1.6	23.43	1463	7.17	

Comments:

Brown AND Caldwell

SITE VISITATION

JOB NAME: Florence Copper POC wells **JOB NUMBER:** 149050

PERSONNEL: J. Anderson / National Ewp **DATE:** 2/15/17
Florence Copper

COMMENTS:

0600 JRA on-site. Sign in @ drill rig. Meet up w/ development crew.

0615 Pump crew setting up. Sign job induction form (discuss high pressures hazards). Tremie pipe tripped in & to 600'.

0700 Development crew emptying water truck.

0715 Start air lift from 600' bgs. Collected Imhoff cone. Imhoff cone collected last night was mostly clear & <1.0 mg/L "floc".

0735 Collected Imhoff cone. Water clear.

0743 Call Ian to determine where to set pump for development. Set pump @ 620'

0752 Water truck full. Finish air lift. Last Imhoff cone only had trace amount of sand. No floc. Water clear.

0800 Tripping out tremie pipe. Calibrate YSI 556

0850 Air lift tremie tripped out. Setting up for pumping.

1100 Take static water level -226.61 from pump plate.

1305 Stop pumping. Water clear after 2 surges. Begin tripping out.

1316 Ian texted back and wants one more surge.

1325 Tripped back in. Turn pump on.

1400 Ian out to see well development. Gave the OK to shut off pump. Turning off pump & tripping out

1615 Drillers continuing to trip out. JRA off-site.

JRA
2/15/17

HALEY & ALDRICH, INC.
One Arizona Center
400 E. Van Buren St., Suite 545
Phoenix, AZ 85004
602.760.2450

Technical Memorandum

14 September 2018
File No. 129687-010

TO: Florence Copper Inc.
Ian Ream, Senior Hydrogeologist

FROM: Haley & Aldrich, Inc.
Lauren Candreva, R.G.

Subject: Drilling and Installation Summary
PTF Point-of-Compliance Well M54-O
Florence Copper Inc., Florence, Arizona

This document describes the drilling, installation, and testing of Production Test Facility (PTF) point-of-compliance (POC) well M54-O for Florence Copper Inc. (Florence Copper) in Florence, Arizona, including the equipment used to perform the work, completion, and the results of well testing activities. Separate well completion reports have been created for each PTF well.

The Arizona Department of Water Resources Registry ID for well M54-O is 55-226798; the Well Registry Report is included in Appendix A. The well is located in the southeast quarter of the northwest quarter of the southwest quarter of Section 28 of Township 4 north, Range 9 East of the Gila and Salt River Baseline and Meridian (D(4-9)28CBD). The well is not located within the Area of Review; it was completed as a POC well at the site (Figure 1).

BOREHOLE DRILLING AND LOGGING

Florence Copper contracted National Exploration, Wells, & Pumps (National) to drill, install, and test well M52-UBF in accordance with *Bid Specifications: Installation of Three POC Wells, Production Test Facility, Florence, Arizona* (Haley & Aldrich, 2015). A Schramm T685WS drilling rig was used for all drilling and construction activities. Haley & Aldrich provided intermittent oversight of drilling activities, geophysical logging, well installation, and testing. Brown and Caldwell also provided oversight for some activities. All reported depths are in feet below ground surface unless otherwise noted.

A steel surface casing (nominal 14-inch diameter; 17.5-inch diameter borehole) with cement surface seal was installed to 40 feet on 28 January 2017. Type V neat cement was installed from total depth to ground surface using the submerged tremie method.

Borehole drilling (10⅝-inch diameter, mud-rotary drilling method) commenced on 29 January 2017 and was completed to a total depth of 1,210 feet on 5 February 2017. On 6 February 2017, Southwest Exploration Services, LLC completed the following downhole geophysical logs within the borehole (Figure 2; Appendix B):

- Specific potential;
- Natural gamma;
- Electrical resistivity;
- Fluid conductivity;
- Caliper;
- Temperature;
- Sonic; and
- Deviation.

The results of the deviation survey indicate that the total drift distance of the borehole at total depth was 14.98 feet with a final drift bearing of 258.7 degrees; this was also the maximum deviation of the borehole.

Geology

The borehole lithology was determined by inspecting drill cuttings as the borehole advanced and were refined based on the results of the geophysical surveys. The borehole penetrated the Upper Basin Fill Unit (UBFU), Middle Fine-Grained Unit (MFGU), Lower Basin Fill Unit (LBFU), and terminated in the Bedrock Oxide Unit. The depths to the lithologic contacts of the units are as follows:

- Bottom of UBFU – 286 feet;
- Bottom of MFGU – 300 feet; and
- Bottom of LBFU – 740 feet.

A lithologic log of the well M54-O borehole is provided in Appendix C.

WELL INSTALLATION AND DEVELOPMENT

Installation

The well was installed on 6 February 2017 and consists of 5-inch nominal diameter casing and screen installed to 1,199 feet (Figure 3). The blank well casing is nominal 5-inch diameter mild steel installed to a depth of 668 feet. The blank well casing reaches a depth of 668.47 feet. The well screen is nominal 5-inch diameter Schedule 80 polyvinyl chloride (PVC) screen with 0.020-inch-wide slots and extends from 668 to 1,198 feet. The bottom of the screen is closed with a PVC cap. A steel cross-over conforming to the specifications of the casing and screen, manufactured from mild steel, was used to

join the casing and screen. During casing installation, 316 grade stainless steel centralizers were installed at approximately 40-foot intervals. Pipe tally forms are included in Appendix D.

Annular materials were installed on 6 February 2017 using tremie pipe. Filter pack consisting of No. 8 to 12 US Mesh Colorado Silica Sand was installed from the total depth of the borehole (1,210 feet) to 659 feet. An interval of fine sand and bentonite chips was installed from 649 to 659 feet. Type V neat cement was installed using the submerged tremie method from 649 feet to the ground surface. Annular material forms are included in Appendix D.

Development

After demobilization of the drill rig, the well was initially developed by the airlift method, followed by pump development. Development activities were completed by National using a workover rig. On 10 February 2017, an airline was temporarily installed to various depths ranging from 200 to 680 feet; airlift development of the well was conducted to purge drilling fluids and solids from the well. During airlift development, the airlift pump was turned on and off to surge the well. Airlift development was conducted over a period of 3 days. The discharge was turbid but sand-free at the end of the airlift development period.

To pump develop the well, on 16 February 2017 a submersible pump was temporarily installed at a depth of 960 feet. The pump development was conducted at approximately 20 gallons per minute (gpm) for 8 hours; the submersible pump was periodically turned off to surge the well during development. The development was concluded on 17 February 2017. The discharge was sand-free with turbidity values less than 15 Nephelometric Turbidity Units.

The well was airlift developed for a second time beginning on 9 May 2017, when an airline was temporarily installed at various depths ranging from 600 to 1,080 feet; airlift development of the well was conducted at approximately 40 to 80 gpm. As before, the airlift pump was turned on and off to surge the well. Airlift development was conducted over a period of 4 days. The discharge was turbid with less than 0.5 parts per million of sand at the end of the airlift development period.

On 12 May 2017, a second round of pump development was conducted. A submersible pump was temporarily installed at a depth of 1,195 feet and pump development was conducted at approximately 17 gpm; the submersible pump was periodically turned off to surge the well. The discharge was sand-free and visually clear after approximately 1 hour, but development continued over a period of 3 days. The development was concluded on 15 May 2017, at which time the discharge was sand-free with turbidity values less than 5 Nephelometric Turbidity Units.

All well development forms are included in Appendix D.

In July 2017, the static depth to water at well M54-O was measured at 235.65 feet.

Well Completion

Upon completion, a locking, 14-inch diameter surface vault was installed in a concrete pad at the surface. A QED Environmental Systems Well Wizard® low-flow bladder pump was installed with a pump intake depth of 1,000 feet below the top of casing.

The surveyed location of well M54-O is:

Northing (feet)	Easting (feet)	Measuring Point Elevation (feet amsl)
746702.36	847342.99	1482.42

***Notes**:*

Northing and easting locations provided in State Plane North American Datum 1983, vertical location provided in North American Vertical Datum 1988.

amsl – feet above mean sea level

Ambient water quality sampling was conducted at the well. The water quality results and water level elevations measured are summarized in *Procedures for Determining Alert Levels and Aquifer Quality Limits for Groundwater Compliance Monitoring* (Brown and Caldwell, 2018).

REFERENCES

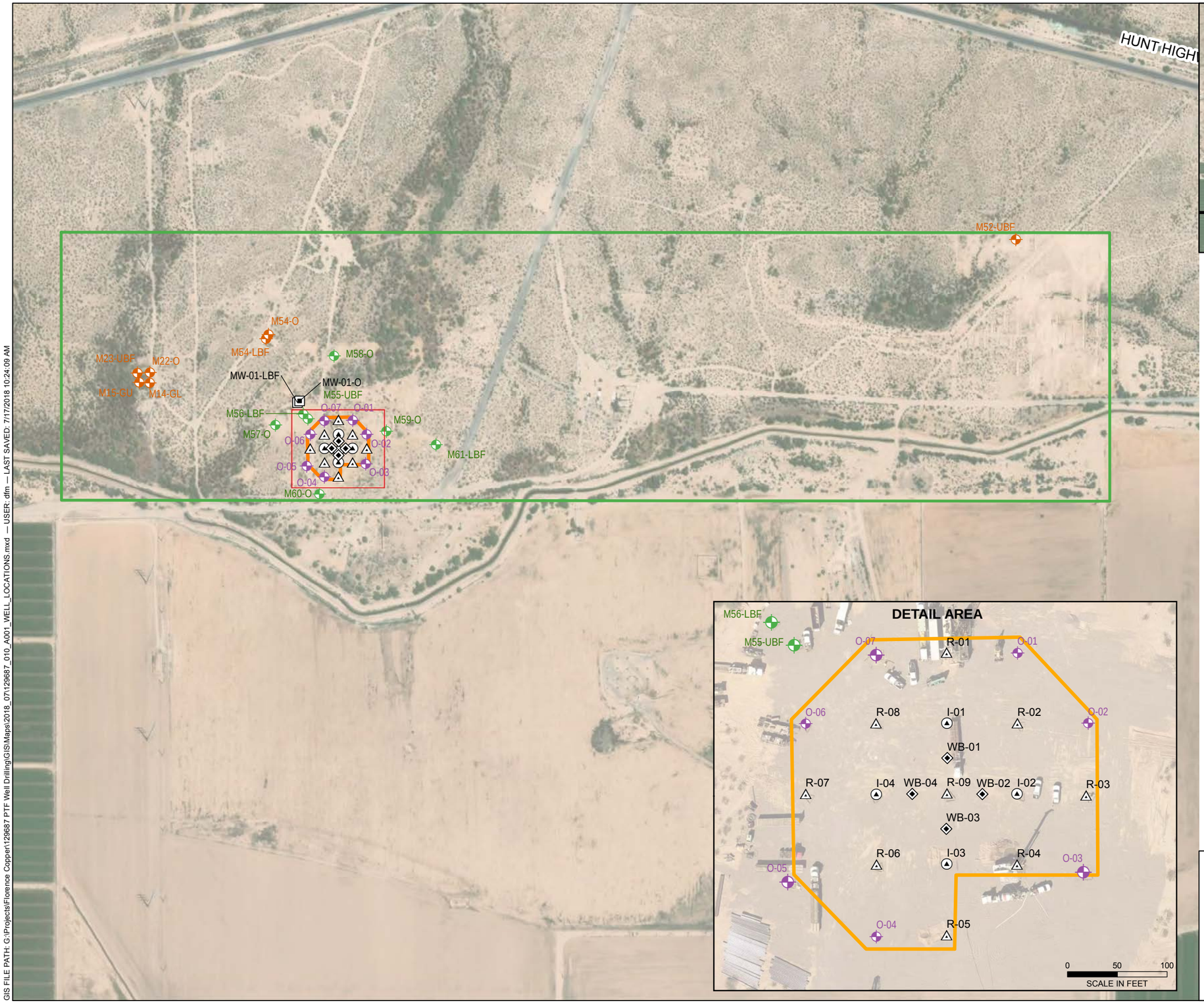
Brown and Caldwell, Inc., 2018. *Procedures for Determining Alert Levels and Aquifer Quality Limits for Groundwater Compliance Monitoring, Florence Copper Project, Florence, Arizona*. June.

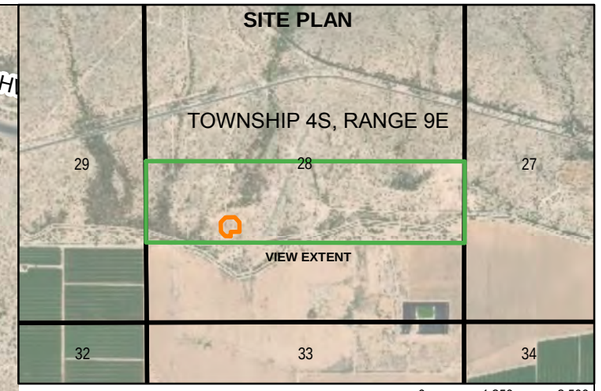
Haley & Aldrich, Inc., 2015. *Bid Specifications: Installation of Three POC Wells, Production Test Facility, Florence, Arizona*. June 2015 for Florence Copper Inc.

Enclosures:

Figure 1 – Well Locations
Figure 2 – M54-O Point-of-Compliance Well Geophysical Data and Lithologic Log
Figure 3 – M54-O Point-of-Compliance Well As-Built Diagram
Appendix A – Arizona Department of Water Resources Well Registry Report
Appendix B – Geophysical Surveys
Appendix C – Lithologic Log
Appendix D – Well Completion Forms

FIGURES





LEGEND

- OBSERVATION WELL
- SUPPLEMENTAL MONITORING WELL
- POINT-OF-COMPLIANCE WELL

PTF WELL

- INJECTION
- RECOVERY
- WESTBAY WELL
- OPERATIONAL MONITORING
- PTF WELL FIELD
- STATE LAND LEASE

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

0 500 1,000
SCALE IN FEET

HALEY ALDRICH

FLORENCE COPPER PROJECT
FLORENCE, ARIZONA

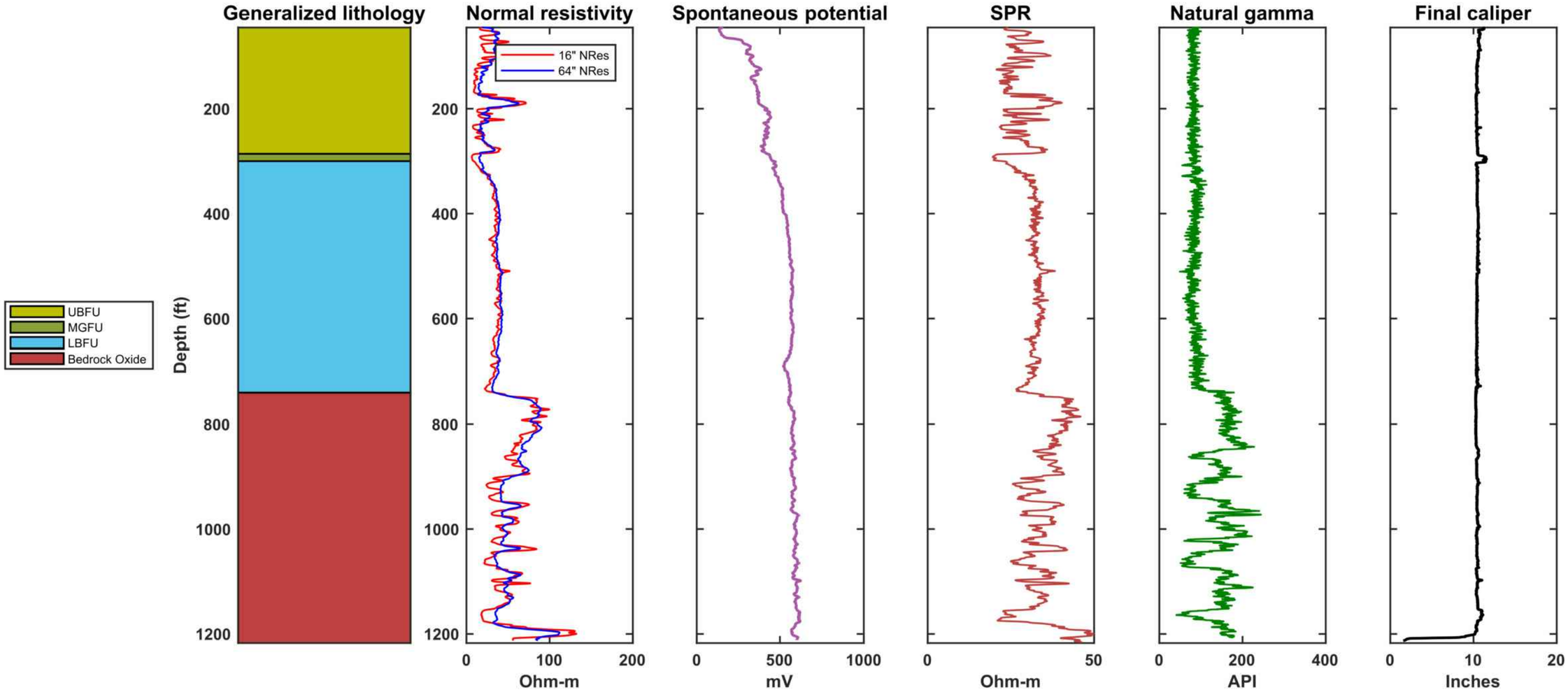
WELL LOCATIONS

FLORENCE COPPER INC.

AUGUST 2018

FIGURE 1

GIS FILE PATH: G:\Projects\Florence Copper\129687 PTF Well Drilling\GIS\Maps\2018_07\129687_010_A001_WELL_LOCATIONS.mxd — USER: dfm — LAST SAVED: 7/17/2018 10:24:09 AM



HALEY ALDRICH

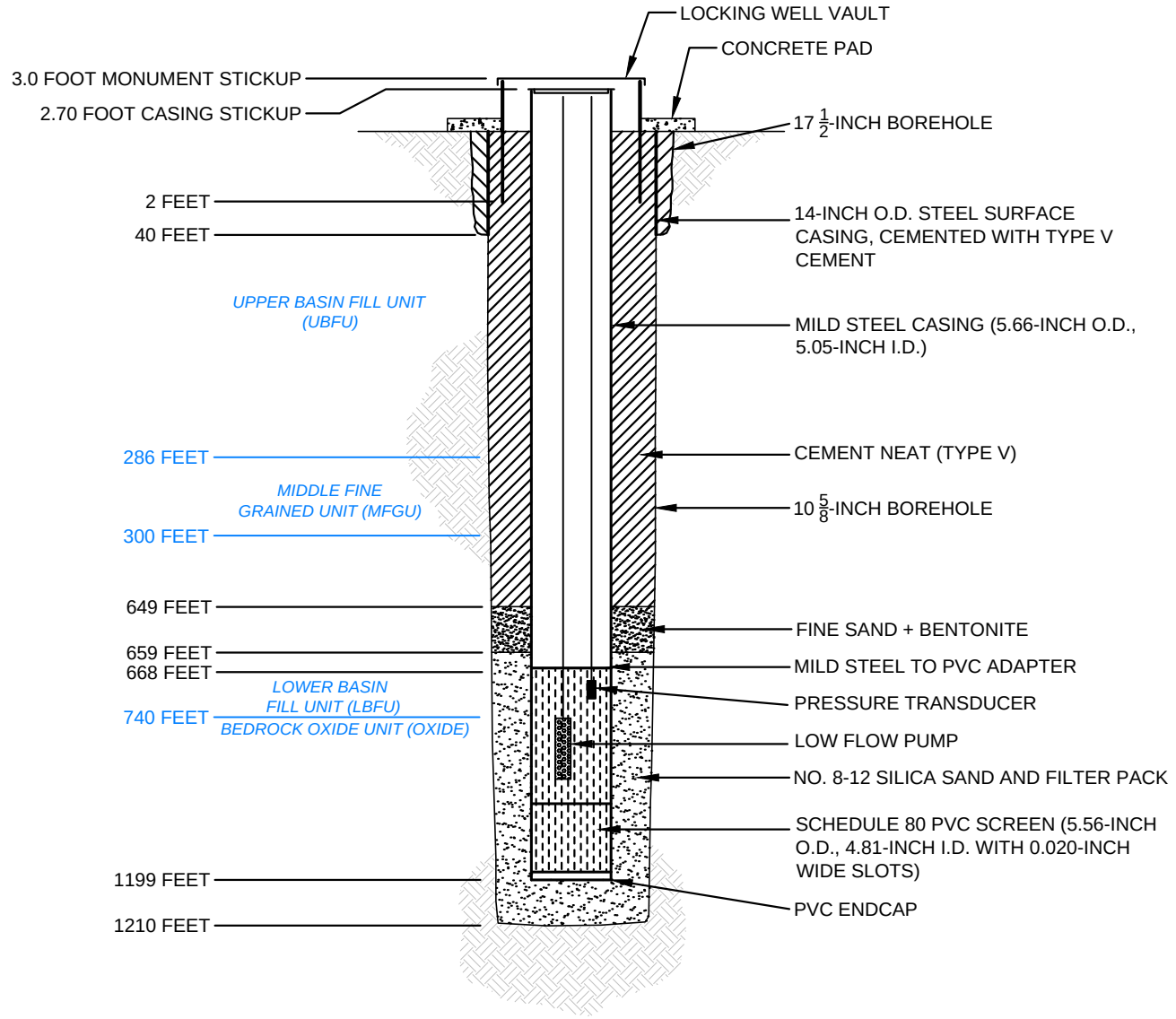
PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

M54-O POINT OF COMPLIANCE WELL GEOPHYSICAL DATA AND LITHOLOGIC LOG

FLORENCE COPPER

SCALE: AS SHOWN
SEPTEMBER 2018

FIGURE 2



NOTES

1. WELL REGISTRATION NO.: 55-226798
2. CADASTRAL LOCATION: D (4-9) 28 CBD
3. TOP OF CASING ELEVATION: 1482.42' AMSL
4. CONCRETE PAD ELEVATION: 1480.20' AMSL
5. I.D. = INSIDE DIAMETER
6. O.D. = OUTSIDE DIAMETER
7. PVC = POLYVINYL CHLORIDE

HALEY ALDRICH

PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

M54-O
POINT-OF-COMPLIANCE WELL AS-BUILT DIAGRAM

FLORENCE COPPER INC.

SCALE: NOT TO SCALE
SEPTEMBER 2018

FIGURE 3

MOBINI, GITA Printed: 8/31/2018 2:34 PM Layout: M54-O
E:\PROJECTS\FLORENCE COPPER\CAD\AS-BUILT\MONITORING WELLS\M54-O_WELLDESIGN_ASBUILT.DWG

APPENDIX A

Arizona Department of Water Resources Well Registry Report

Arizona Department of Water Resources
Water Management Division
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8627 • (602) 771-8690 fax
· www.azwater.gov ·

RECEIVED
APR 23 2018
ADWR

Well Driller Report and Well Log

NP

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK.

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 226798

PERMIT NUMBER (IF ISSUED)

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

RECEIVED
APR 23 2018
ADWR

Mail To:

NAME: National EWP

ADDRESS: 1200 west San Pedro Street

CITY / STATE / ZIP: Gilbert, AZ, 85233

DWR LICENSE NUMBER: 823

TELEPHONE NUMBER: 480-558-3500

FAX:

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Florence Copper, INC

MAILING ADDRESS: 1575 W.Hunt HWY

CITY / STATE / ZIP CODE: Florence, AZ, 85132

CONTACT PERSON NAME AND TITLE: Ian Ream, Senior Hydraulogist

TELEPHONE NUMBER: 520 374 3984

FAX:

WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.): M54-0

Location of Well

WELL LOCATION ADDRESS (IF ANY): Same as well owner

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0S	9.0 E	28	SE ¼	NW ¼	SW ¼

LATITUDE			LONGITUDE		
33° Degrees	3' Minutes	6" N Seconds	111° Degrees	26' Minutes	8" W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)
☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: 1492 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE)
☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*GEOGRAPHIC COORDINATE DATUM (CHECK ONE)
☒ NAD-83 ☐ Other *(please specify)*:

COUNTY: Pinal

ASSESSOR'S PARCEL ID NUMBER: BOOK 0 MAP 0 PARCEL 0

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ALL THAT APPLY
- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other *(please specify)*:

Method of Well Development

CHECK ALL THAT APPLY
- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other *(please specify)*:

Condition of Well

CHECK ONE
- ☒ Capped
- ☐ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other *(please specify)*:

Construction Dates

DATE WELL CONSTRUCTION STARTED: 01-28-2017

DATE WELL CONSTRUCTION COMPLETED: 02-07-2017

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY

DATE: 2/23/2018

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 226798

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Depth

DEPTH OF BORING	DEPTH OF COMPLETED WELL
1210 Feet Below Land Surface	1199 Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
226 Feet Below Land Surface	02-07-17	12:00PM	☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	40	17.5
40	1210	10.625

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	668.5	5.56	x				x						
668.5	1199	5.56	x								x		

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	649			x								
649	658.5							x	pell plug pellets			
658.5	1210										x	8x12

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 226798

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE		Description	Check (T) every interval where water was encountered (if known)
FROM (feet)	TO (feet)	Describe material, grain size, color, etc.	
0	300	Upper Basin Fill unit	
300	315	Middle Fine-Grained unit	
315	855	Lower Basin Fill unit	
855	1210	Oxide Bedrock	

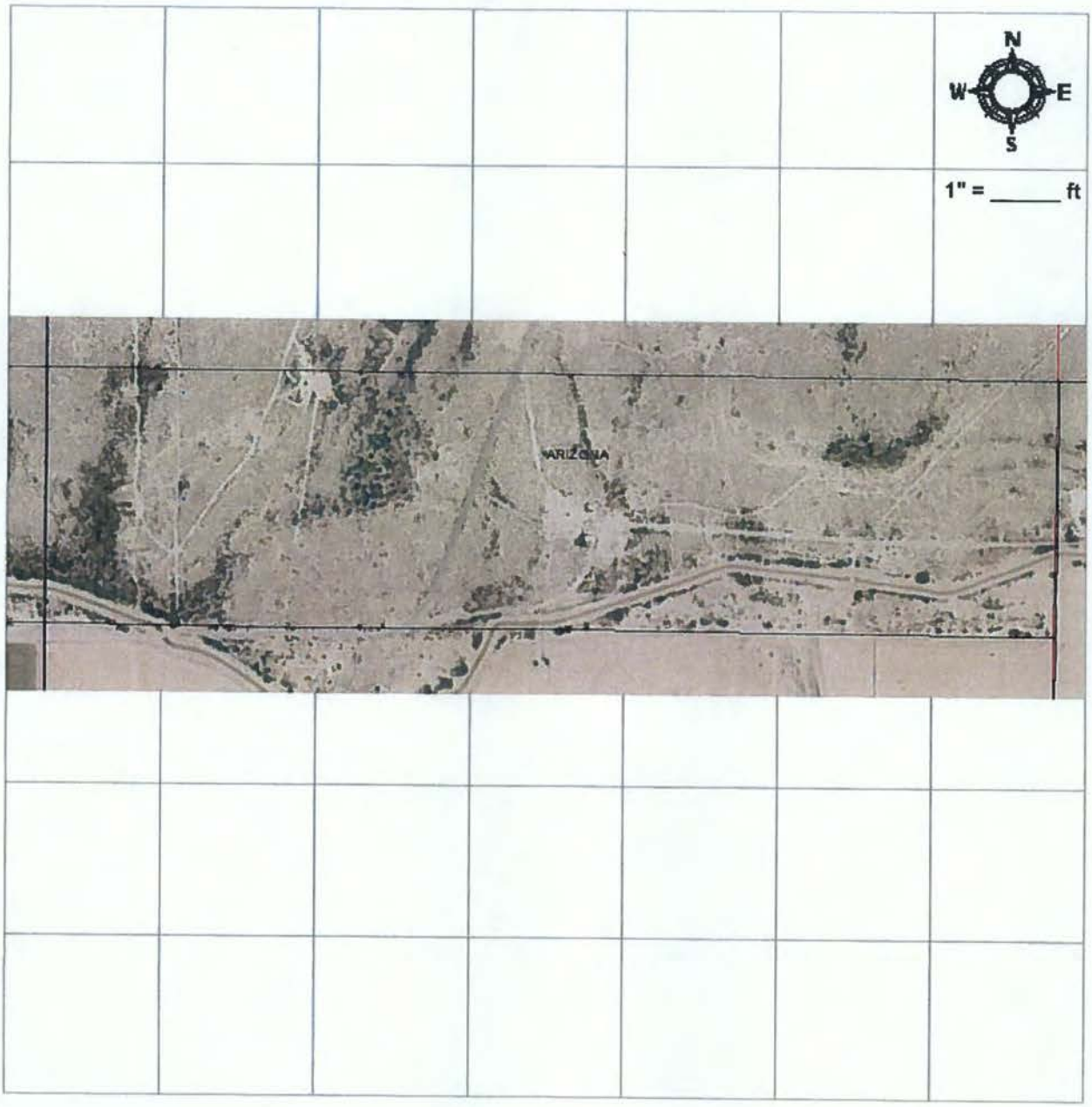
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 226798

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)		
	BOOK	MAP	PARCEL
FLORENCE COPPER, INC.			

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



Run Date: 01/13/2017

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location D 4.0 9.0 28 C B D

Well Reg.No 55 - 226798

AMA PINAL AMA

Registered Name FLORENCE COPPER, INC.
1575 W. HUNT HWY
FLORENCE AZ 85132

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 01/11/2017

Owner OWNER
Driller No. 823
Driller Name NATIONAL EWP, INC.
Driller Phone 480-558-3500
County PINAL
Intended Capacity GPM 0.00

Well Type ENV - MONITOR
SubBasin ELOY
Watershed UPPER GILA RIVER
Registered Water Uses MONITORING
Registered Well Uses MONITOR
Discharge Method NO DISCHARGE METHOD LISTED
Power NO POWER CODE LISTED

Well Depth	0.00	**Case Diam**	0.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	0.00	**CRT**	
Draw Down	0.00	**Water Level**	0.00	**Log**	
		Acres Irrig	0.00	**Finish**	NO CASING CODE LISTED

Contamination Site: NO - NOT IN ANY REMEDIAL ACTION SITE

Tribe: Not in a tribal zone

Comments Well M54-O
Landownership: AZ State Land Dept. (Mineral Lease #11-026500)
TV

Current Action

1/13/2017 555 DRILLER & OWNER PACKETS MAILED
Action Comment: TNV

Action History

1/13/2017 550 DRILLING AUTHORITY ISSUED
Action Comment: TNV

1/12/2017 855 CHANGE OF WELL LEGAL DESCRIPTION
Action Comment: OLD LEGAL DESC: D(4.0-9.0) 8 CBD section 8 was corrected to 28 per well owner. Typo. TNV 1/12/2017

1/11/2017 155 NOI RECEIVED FOR A NEW NON-PRODUCTION WELL
Action Comment: TNV

ARIZONA DEPARTMENT OF WATER RESOURCES

1110 W. Washington St. Suite 310
Phoenix, Arizona 85007

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-226798**

AUTHORIZED DRILLER: **NATIONAL EWP, INC.** LICENSE NO: **823**

NOTICE OF INTENTION TO DRILL ENV - MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **FLORENCE COPPER, INC. 1575 W. HUNT HWY FLORENCE, AZ, 85132**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

SE 1/4 of the **NW** 1/4 of the **SW** 1/4 Section **28** Township **4.0** **SOUTH** Range **9.0** **EAST**

NO. OF WELLS IN THIS PROJECT: **1**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **January 11, 2018**

Stella Murillo

GROUNDWATER PERMITTING AND WELLS

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St. Suite 310
Phoenix, AZ 85007
602-771-8500
azwater.gov

January 13, 2017

FLORENCE COPPER, INC.
1575 W. HUNT HWY
FLORENCE, AZ 85132

DOUGLAS A. DUCEY
Governor

THOMAS BUSCHATZKE
Director

Registration No. 55- 226798
File Number: D(4-9) 28 CBD

Dear Well Applicant:

Enclosed is a copy of the Notice of Intention to Drill (NOI) a well which you or your driller recently filed with the Department of Water Resources. This letter is to inform you that the Department has approved the NOI and has mailed, or made available for download, a drilling authorization card to your designated well drilling contractor. The driller may not begin drilling until he/she has received the authorization, and must keep it in their possession at the well site during drilling. Although the issuance of this drill card authorizes you to drill the proposed well under state law, the drilling of the well may be subject to restrictions or regulations imposed by other entities.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, a new NOI must be filed and authorization from this Department received before proceeding with drilling. If the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed by your driller [as required by A.A.C. R12-15-816(F)].

If you change drillers, you must notify the Department of the new driller's identity on a Request to Change Well Information (form 55-71A). Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he/she receives a new drilling authorization card from the Department.

If you find it necessary to change the location of the proposed well(s), you may not proceed with drilling until you file an amended NOI with the Department. An amended drilling authorization card will then be issued to the well drilling contractor, which must be in their possession before drilling begins.

Arizona statute [A.R.S. § 45-600] requires registered well owners to file a Pump Installation Completion Report (form 55-56) with the Department within 30 days after the installation of pumping equipment, if authorized. A blank report is enclosed for your convenience. State statute also requires the driller to file a complete and accurate Well Drillers Report and Well Log (form 55-55) within 30 days after completion of drilling. A blank report form was provided to your driller with the drilling authorization card. You should insist and ensure that all of the required reports are accurately completed and timely filed with the Department.

Please be advised that Arizona statute [A.R.S. § 45-593(C)] requires a registered well owner to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (form 55-71A) that may be downloaded from the ADWR Internet website at www.azwater.gov.

Sincerely,

Groundwater Permitting and Wells Section

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8500 • (602) 771-8690
· www.azwater.gov ·

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

$150 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - $150 check or money order for the filing fee.
  - Well construction diagram, labeling all specifications listed in Section 6 and Section 7.

  Authority for fee: A.R.S. § 45-596 and A.A.C. R12-15-104.

AMA / INA	B	SB
Pinal	PTN	11
RECEIVED DATE	WS	
1/11/2017	08 UGR	
ISSUED DATE	REMEDIAL ACTION SITE	
1/13/2017	000	

FILE NUMBER: D(4-9)28 CBD
WELL REGISTRATION NUMBER: 55 - 226798

SECTION 1. REGISTRY INFORMATION

To determine the location of well, please refer to the Well Registry Map (https://gisweb.azwater.gov/WellRegistry/Default.aspx) and/or Google Earth (http://www.earthpoint.us/Townships.aspx)

Well Type (CHECK ONE)
- ☒ Monitor
- ☐ Piezometer
- ☐ Vadose Zone
- ☐ Air Sparging
- ☐ Soil Vapor Extraction
- ☐ Other (*please specify*):

Proposed Action (CHECK ONE)
- ☒ Drill New Well
- ☐ Deepen
- ☐ Modify

WELL REGISTRATION NUMBER (*if Deepening or Modifying*): 55 -

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP(N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0 S	9.0 E	28	SW ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK | MAP | PARCEL 1001

COUNTY WHERE WELL IS LOCATED: PINAL

Corrected per owner TW

SECTION 2. OWNER INFORMATION

Land Owner	**Well Owner** (*check this box if Land Owner and Well Owner are same* ☐)
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: AZ State Land Dept (Mineral Lease # 11-026500)	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: Florence Copper, Inc.
MAILING ADDRESS: 1616 W Adams St	MAILING ADDRESS: 1575 W Hunt Hwy
CITY / STATE / ZIP CODE: Phoenix, AZ 85007	CITY / STATE / ZIP CODE: Florence, AZ 85132
CONTACT PERSON NAME AND TITLE: Lisa Atkins, State Land Commissioner	CONTACT PERSON NAME AND TITLE: Ian Ream, Senior Hydrogeologist
TELEPHONE NUMBER: (602) 542-4631 / FAX:	TELEPHONE NUMBER: (520) 374-3984 / FAX: (520) 374-3999

RECEIVED JAN 11 2017 ADWR

SECTION 3. DRILLING AUTHORIZATION

Drilling Firm	**Consultant** (*if applicable*)
NAME: National EWP	CONSULTING FIRM: Haley & Aldrich, Inc.
DWR LICENSE NUMBER: 823 / ROC LICENSE CATEGORY: A-4	CONTACT PERSON NAME: Mark Nicholls
TELEPHONE NUMBER: (480) 558-3500 / FAX: 480-558-3525	TELEPHONE NUMBER: 602-760-2423 / FAX: 602-760-2448
EMAIL ADDRESS: jstephens@nationalewp.com	EMAIL ADDRESS: mnicholls@haleyaldrich.com

SECTION 4.

Questions	Yes	No	Explanation:
1. Are all annular spaces between the casing(s) and the borehole for the placement of grout at least 2 inches?	☒	☐	2-inch annular spaces are special standards required for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
2. Is the screened or perforated interval of casing greater than 100 feet in length?	☒	☐	100-foot maximum screen intervals are a special standard for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
3. Are you requesting a variance to use thermoplastic casing in lieu of steel casing in the surface seal?	☐	☒	The wells must be constructed in a vault. Pursuant to A.A.C. R12-15-801 (27) a "vault" is defined as a tamper-resistant watertight structure used to complete a well below the land surface.
4. Is there another well name or identification number associated with this well? (e.g., MW-1, PZ2, 06-04, etc.)	☒	☐	If yes, please state: M54-O
5. Have construction plans been coordinated with the Arizona Department of Environmental Quality?	☒	☐	If yes, please state agency contact & phone number: David Haag. 602-771-4669
6. For monitor wells, is dedicated pump equipment to be installed?	☒	☐	If yes, please state design pump capacity (*Gallons per Minute*): Low-flow
7. Is this well a new well located in an Active Management Area AND intended to pump water for the purpose of remediating groundwater?	☐	☒	You must also file a supplemental form A.R.S. § 45-454(c) & (f) unless the well is a replacement well and the total number of operable wells on the site is not increasing. (*See instructions*)
8. Will the well registration number be stamped on the vault cover or on the upper part of the casing?	☒	☐	If no, where will the registration number be placed?

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER
55 - 226798

SECTION 6. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE

- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (*please specify*):

DATE CONSTRUCTION TO BEGIN
01/16/2017

Method of Well Development

CHECK ONE

- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other (*please specify*):

Method of Sealing at Reduction Points

CHECK ONE

- ☒ None
- ☐ Welded
- ☐ Swedged
- ☐ Packed
- ☐ Other (*please specify*):

Grout Emplacement Method

CHECK ONE

- ☒ Tremie Pumped *(Recommended)*
- ☐ Gravity
- ☐ Pressure Grout
- ☐ Other (*please specify*):

Surface or Conductor Casing

CHECK ONE

- ☐ Flush Mount in a vault
- ☒ Extends at least 1' above grade

SECTION 7. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

Attach a well construction diagram labeling all specifications below.

Borehole / Casing

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Casing: DEPTH FROM SURFACE FROM (feet)	Casing: DEPTH FROM SURFACE TO (feet)	Casing: OUTER DIAMETER (inches)	Casing: MATERIAL TYPE (T): STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	Casing: PERFORATION TYPE (T): BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	20	0	20	14	☒	☐	☐		☒	☐	☐	☐	☐		
0	1210	10.5	0	670	5	☒	☐	☐		☒	☐	☐	☐	☐		
			670	1200	5	☐	☒	☐		☐	☐	☐	☐	☒		0.020

Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	GRAVEL	SIZE
0	650	☐	☐	☒	☐	☐	☐	☐		☐	☐	
650	660	☐	☐	☐	☐	☐	☐	☐		☒	☐	Fine sand
660	1200	☐	☐	☐	☐	☐	☐	☐		☒	☐	No. 8-12

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS

EXPECTED DEPTH TO WATER *(Feet Below Ground Surface)*
220

SECTION 8. PERMISSION TO ACCESS

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 9. LAND OWNER AND WELL OWNER SIGNATURE

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and

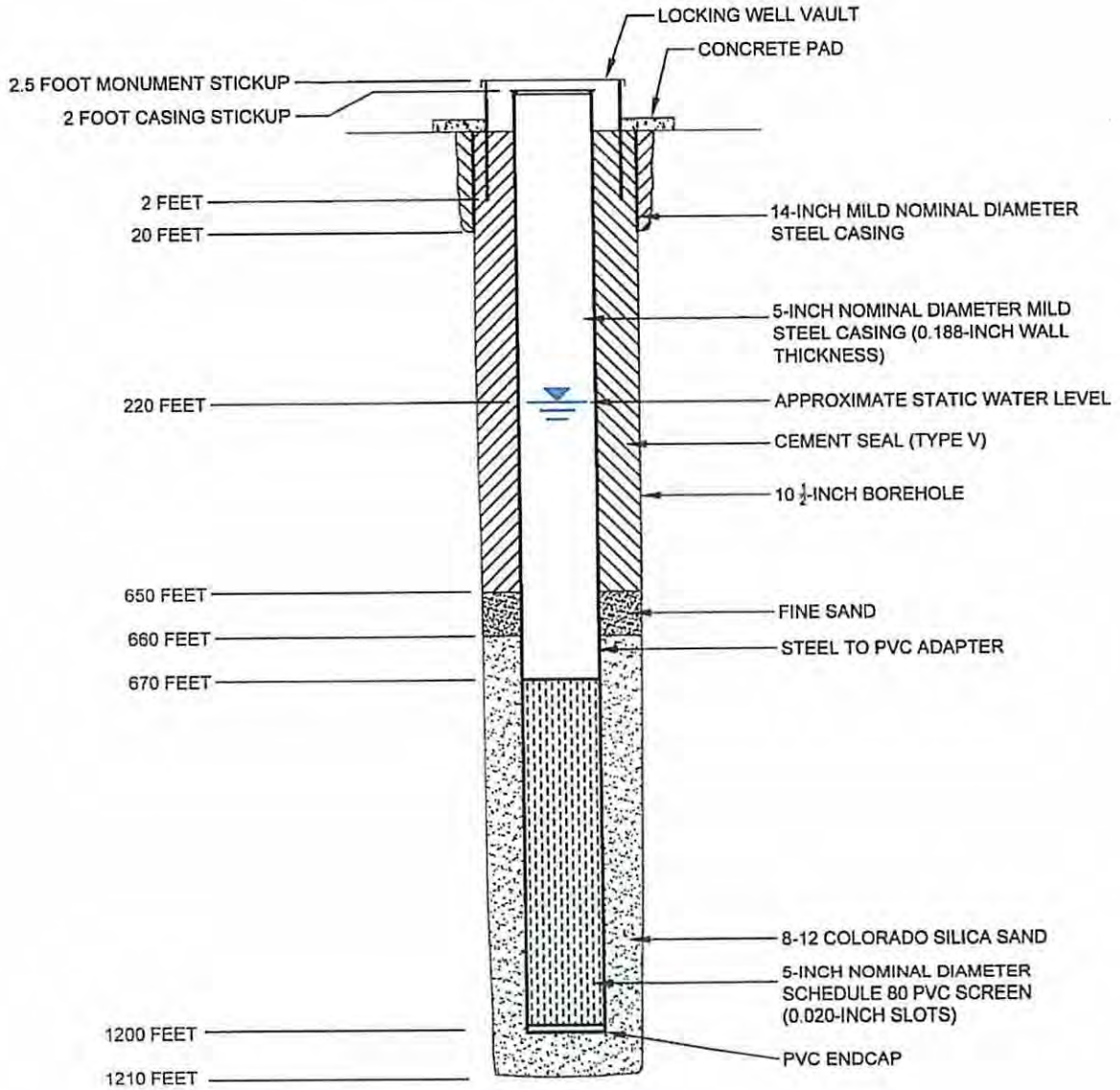
Land Owner	Well Owner *(if different from Land Owner; See instructions)*
PRINT NAME AND TITLE	PRINT NAME AND TITLE Ian Ream, Senior Hydrogeologist
SIGNATURE OF LAND OWNER	SIGNATURE OF WELL OWNER
DATE	DATE Jan 10, 2017
☐ By checking this box, you agree to allow ADWR to contact you via electronic mail.	☒ By checking this box, you agree to allow ADWR to contact you via electronic mail.
EMAIL ADDRESS	EMAIL ADDRESS IanReam@florencecopper.com

SECTION 5. Well Construction Diagram

Provide a well construction diagram showing all existing well construction features listed in Section 6 and Section 7.

See attached well diagram.

55-226798



HALEY ALDRICH

FLORENCE COPPER, INC.
FLORENCE, ARIZONA

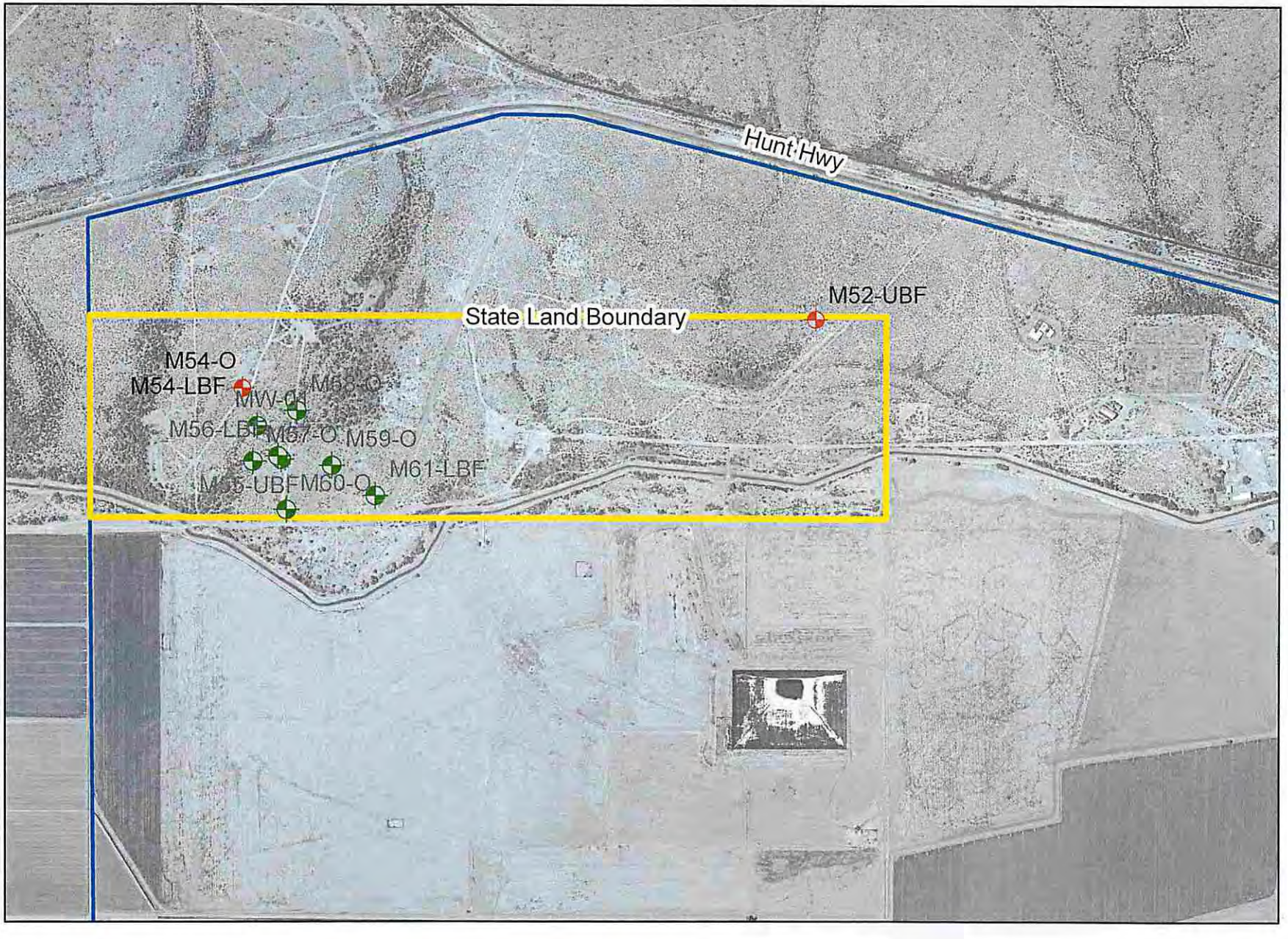
M54-O
WELL CONSTRUCTION DIAGRAM

FLORENCE COPPER INC.

SCALE: NOT TO SCALE

FIGURE 1

MOBINI, GITA Printed: 8/26/2015 2:43 PM Layout: MW-01-O
G:\PROJECTS\CURIS RESOURCES\38706-CURIS FEASIBILITY\DRAWINGS\MW-01-O_WELLDESIGN.DWG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State Land Boundary
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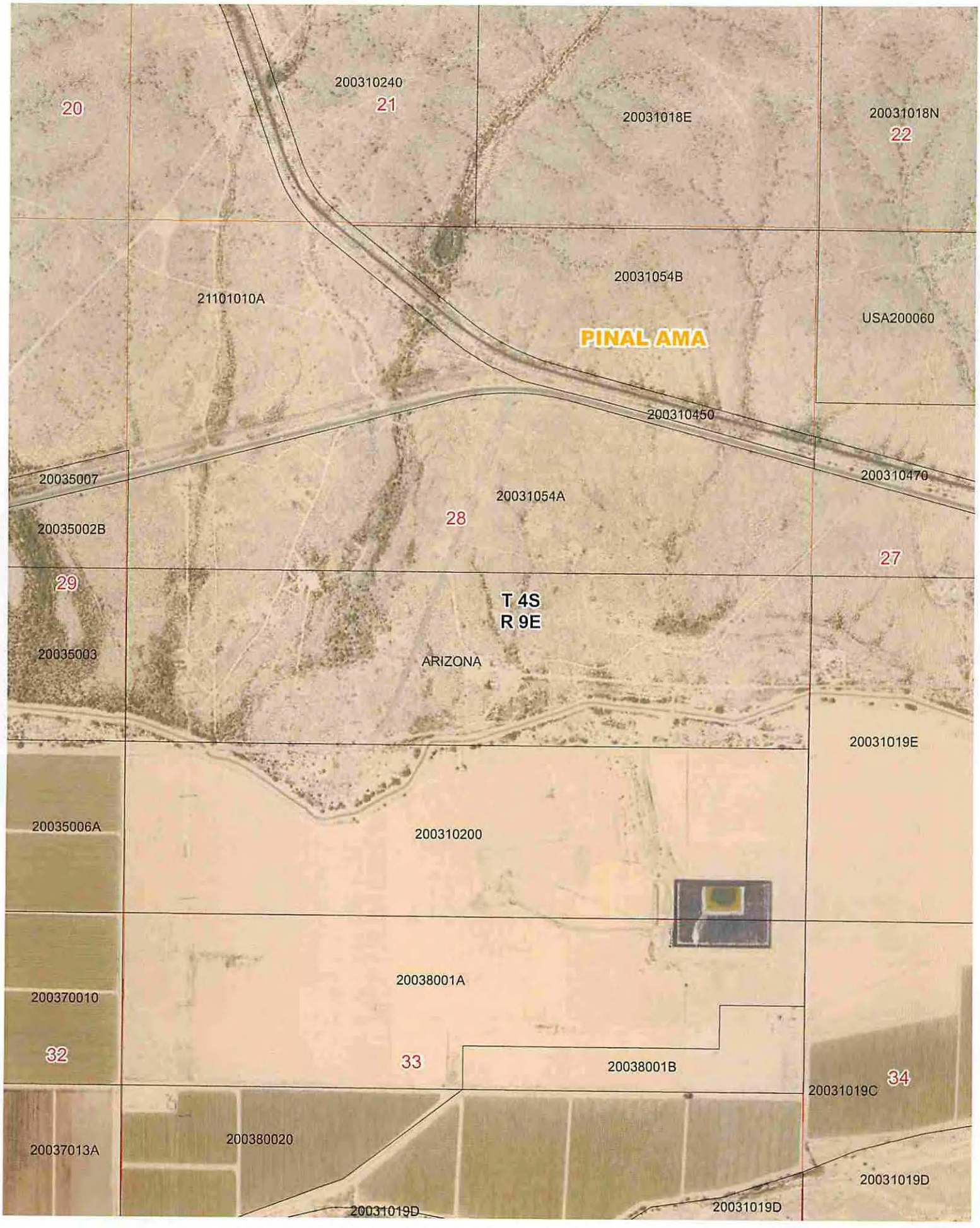
M54-O
M54-LBF
M68-O
MW-01
M56-LBF
M67-O
M59-O
M61-LBF
M60-O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20
21
20031018E
20031018N
22
20031054B
21101010A
USA200060
PINAL AMA
200310450
20035007
200310470
20031054A
20035002B
28
27
29
T 4S
R 9E
20035003
ARIZONA
20031019E
20035006A
200310200
20038001A
200370010
32
33
20038001B
34
20031019C
200380020
20037013A
20031019D
20031019D
20031019D

MINERAL LEASE

11-26500

Florence Copper Inc.

1575 W. Hunt Highway

Florence, AZ USA 85132

N2S2 Section 28, T4S, R9E

Pinal County

Term

December 13, 2013 – December 12, 2033

STATE LAND DEPARTMENT

STATE OF ARIZONA

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STATE OF ARIZONA

MINERAL LEASE

Lease No. **11-26500**

This mineral lease ("Lease") is entered into by and between the State of Arizona ("the State" or "Lessor"), Arizona State Land Department ("Department"), through the State Land Commissioner ("Commissioner"), and Florence Copper Inc. ("Lessee"), pursuant to A.R.S. § 27-254. In consideration of the payment of rent and royalties and of performance by the parties of each of the provisions set forth herein, the parties agree as follows:

Article 1
LEASED LAND

1.1 **Lease Provisions**. Lessor hereby leases to Lessee, and Lessee hereby leases from Lessor, for the term, at the rent and royalty rate and in accordance with the provisions of this Lease, the State Land described below and in Appendix A ("Legal Description"), and as depicted in Appendix B ("Location Map") attached hereto and herein referred to as "the Leased Land".

Township **4S**, Range **9E**, Section **28**, **N2S2**, Pinal County, **160.00** Acres

1.2 **Lease Condition**. Lessee takes the Leased Land "as is" and Lessor makes no expressed or implied warranties as to the physical condition of the Leased Land.

Article 2
TERM

2.1 **Lease Term**. The term of this Lease:

Commences on the **13th** day of **December 2013**
And expires on the **12th** day of **December 2033**

unless canceled earlier or terminated as provided herein or as provided by law. Notwithstanding provisions of this Lease relating to termination or cancellation, the provisions on environmental or other indemnification, restoration, reclamation and insurance requirements survive the termination or cancellation of this Lease and remain enforceable

2.2 **Lease Termination**. Upon the sale, exchange, redemption, reconveyance, relinquishment or taking, whether by eminent domain or institutional use, lease of all or any portion of the Leased Land shall terminate on the date of such taking as to the property so taken.

Article 3
RENT

3.1 **Rental Requirement**. Lessee shall pay rent to Lessor as follows for the use and occupancy of the Leased Land during the term of this Lease without offset or deduction and without notice or demand, as established on an annual basis.

3.2 **Annual Rent and Adjustments**. The annual rent is established by Lessor based on an August 1, 2014 appraisal of the Leased Land. Rent for this Lease shall be: **$60,500.00 per year**. The rent will be billed in advance by the Department and is due on or before the anniversary date of the Lease. The Leased Land shall be reappraised and the annual rent reestablished after the Production Test Facility is completed and before the commercial phase of the operation is started.

Article 4
COMMODITIES and UNITS OF PRODUCTION

4.1 **Mineral Commodity**. Copper

4.2 **Production Units.** Tons (short)

Article 5
ROYALTY

5.1 **Royalty Rate**. Lessee shall pay the Lessor a royalty fee equal to a percentage of the gross value for all 'Minerals' (as defined in A.R.S. §27-231) 'Produced and Sold' (as that term is used in A.R.S. §27-234) from the Leased Land subject to such adjustments as may be permitted by the terms of this Lease.

5.1.1 **Sliding Scale Factor**: The Upper and Lower Limits (as defined in sections 5.1.2 and 5.1.3) utilized to determine the range of copper values upon which the Sliding Scale Factor ("SSF") is established, shall be re-evaluated and fixed on each January 1 over the Term of the Lease. The SSF shall range between two and eight percent. The SSF shall be calculated according to the following equation:

SSF = 6% / (Upper Limit – Lower Limit)

where: 6% represents the difference between the highest possible Royalty Rate (8%) and the lowest possible Royalty Rate (2%).

5.1.2 **Upper Limit:** The Upper Limit is defined as the copper price at which the maximum percentage royalty of 8% would be assessed.

As of December 13, 2013, the Upper Limit shall be $3.98 per pound of copper. After January 1, 2015, the Upper Limit shall be reestablished annually on each January 1 such that it equals the numeric average of the monthly copper price, defined in section 5.2 as the Copper Index Price ("CIP"), calculated for the prior sixty (60) months plus one standard deviation for that same sixty (60) month period.

5.1.3 **Lower Limit**: The Lower Limit is defined as the Modified Break-Even Copper Price, which is that copper price where the mining project associated with the Leased Land (i.e. the Florence Copper Project) has a net present value ("NPV") of zero.

As of December 13, 2013, the Lower Limit shall be $2.81 per pound of copper. The Lower Limit shall be reestablished annually after January 1, 2015 by the Arizona State Land Department. The Lower Limit shall be the weighted average of the total production cost based on the future projections of mine revenue and operating cost (life of mine) as reported by Lessee to Lessor and to the Arizona State Department of Revenue ("DOR") annually pursuant to DOR Property Tax Form 82061-A.

5.1.4 **Royalty Rate**: The Royalty Rate, for the period from January 1, 2014 to December 31, 2014 shall be two percent whenever the monthly average CIP is $2.81 per pound or less (Lower Limit), and shall be eight percent whenever the monthly average CIP is $3.98 per pound or more (Upper Limit). The Royalty Rate shall be calculated for any CIP that occurs within the range between $2.81 per pound and $3.98 per pound as follows:

Royalty Rate = [(CIP – Lower Limit) x SSF)] + Minimum Royalty Rate

where: CIP = monthly Copper Index Price
Lower Limit = copper price fixed each January 1
SSF = Sliding Scale Factor
Minimum Royalty Rate = 2% (according to A.R.S. § 27.234.C)

5.2 Market Value: The CIP shall be the average monthly "US Transaction" price as reported by *Platts Metals Week Price Notification Monthly Report*[1]

In the event that the above price ceases to be published, or for any reason becomes inappropriate for the purpose of this lease, a replacement CIP shall be selected by the Commissioner using a nationally recognized pricing index for major mineral commodities.

5.3 Gross Value: The gross value for each calendar month shall be the sum, expressed in United States dollars, of all minerals produced and sold during the previous calendar month. The gross value for copper produced and sold during a calendar month shall be calculated as follows:

Gross Value = CIP x Pounds of Copper Produced and Sold

where: CIP = copper index price
Pounds of Copper Produced and Sold = pounds of copper produced and sold for the previous calendar month

The gross value for other minerals produced and sold during the calendar month shall be calculated in a manner similar to the gross value for copper produced and sold, valued in accordance with A.R.S. §27-234.

5.4 Monthly Royalty: Each calendar month, Lessee shall pay the Lessor the Royalty (the 'Monthly Royalty') calculated based on minerals produced and sold from the Leased Land during the prior calendar month. The amount of the Monthly Royalty shall be calculated as follows:

Monthly Royalty = Gross Value x Royalty Rate

where: Gross Value = calculated as defined in Section 5.3
Royalty Rate = percentage as defined in Section 5.1

[1]

5.5 **Other Minerals**: In the event that other minerals or mineral products are produced and sold from the Leased Land, they shall be valued in accordance with A.R.S. §27-234 and similarly included in the computation of gross value. Should the mineral or mineral product not have a published price, the gross value shall be based on an appraisal that estimates the fair market price of the mineral (A.R.S. §27-234.B). This shall not apply to by-products from the waste water treatment plant.

5.6 **Production Reports**: Monthly production reports, including documentation when required, shall be submitted to the Lessor for each month, including reports for negative production, after the first month of production. Reports are due on or before the 15th of each month following the month of production.

5.7 **Minimum Annual Royalty**: Lessee shall pay to Lessor a minimum royalty of $1,000.00 at the signing of the Lease, and a minimum royalty of $3,200.00 each year thereafter on or before the anniversary of the Commencement Date of the Lease. The minimum annual royalty shall be a credit for Lessee, fully recoupable against production royalties (the Monthly Royalty in Article 5.4) due to Lessor for material used or removed; however, the entire portion of minimum annual royalty unused or not recouped upon the termination or expiration of the Lease shall be the sole property of Lessor. Lessee shall pay the minimum annual royalty each year regardless of use or removal of materials. The minimum annual royalty shall be a continuing credit during the term of the Lease.

5.8 **Royalty Payments**: Royalty payments shall be due within thirty (30) days after billing by the Department.

5.9 **Appraisal Costs**: If, during the term of this Lease, the Lessor determines that a new appraisal is appropriate pursuant to A.R.S. §27-234.C, the Lessor shall arrange for such appraisal and the Lessee shall pay to Lessor within 30 days of the Lessor's request the cost of the appraisal. Such reappraisal shall be required after the completion of the Production Test Facility and before the commercial phase of the operation is started to reestablish the royalty rate.

5.10 **Failure to Pay**: If Lessee fails to pay royalty or appraisal costs described in this Article, on or before the date the payment is due, the amount due accrues interest at the rate and in the manner determined pursuant to A.R.S. §42-1123. If it is determined that failure to pay royalty is not due to reasonable cause, a penalty of five percent (5%) of the amount found to be remaining due shall be added to the royalty for each month or fraction of a month elapsing between the due date and the date on which it is paid. The total penalty shall not exceed one-third (1/3) of the royalty remaining due. The penalty so added to the royalty is due and payable within (10) days of notice and demand from the Commissioner. If any royalty, appraisal assessment, interest, or penalty is not paid by the Lessee when due, the unpaid amounts constitute a lien from the date the amounts become due on all property and rights to property belonging to the Lessee that are located on the Leased Land.

Article 6
USE OF LEASED LAND

6.1 **Purpose**. The Leased Land is leased to Lessee for the purposes of mineral extraction and for uses related thereto and no other use.

This Lease confers the right to extract, process and ship minerals, mineral compounds, and mineral aggregates from the Leased Lands within planes drawn vertically downward through the exterior boundary lines thereof.

6.2 **Consistent With Mine Operating Plan**. Any use of the Leased Land must be performed in a manner consistent with the approved Mine Operating Plan as required under the provisions of Article 21.

Article 7
RECORDS AND INSPECTION

7.1 **Annual Records**. Lessee shall provide the following records on an annual basis to Lessor on or before each anniversary of the effective date of this Lease:

7.1.1 Annual Operations Status Report which includes: an itemized statement of mineral production, total tons of materials mined and processed, total acres disturbed, and total acres reclaimed, and an annual groundwater monitoring report.

7.1.2 Relevant Arizona State Department of Revenue form(s) (82061-A for copper, 82061-B for non-copper, 82061-C for small-scale mines).

7.1.3 Any additional records pertinent to appraisal, compliance with this Lease and mineral production deemed necessary by the Commissioner.

Article 8
TAXES; ADDITIONAL AMOUNTS

8.1 **Assessments Paid By Lessee**. Lessee shall pay all assessments and charges for utilities and communication services, and assessments imposed pursuant to any construction on the Leased Land, all permit and authorization fees, all taxes, duties, charges and assessments of every kind or nature imposed by any public, governmental or political subdivision authority pursuant to any currently or subsequently enacted law, ordinance, regulation or order, which during the term of this Lease, becomes due or are imposed upon, charged against, measured by or become a lien on (a) the Leased Land, (b) any improvements or personal property of Lessee located on the Leased Land, and (c) the interest of Lessee to this Lease or in the proceeds received by Lessee from any assignment or sublease of the Leased Land.

8.2 **Assessment Deadline**. Lessee shall pay or cause to be paid all amounts required to be paid under Paragraph 8.1 before any interest, penalty, fine or cost accrues for nonpayment.

Article 9
WAIVER

9.1 **Waiver Definition**. Acceptance of rent and/or royalty payments by Lessor shall not constitute a waiver by Lessor of any violation by Lessee of the provisions of this Lease.

9.2 **Future Waiver**. No waiver of a breach of any provision of this Lease shall be construed as a waiver of any succeeding breach of the same or any other provision.

Article 10
IMPROVEMENTS

10.1 **Non-Permanent Improvements**. This Lease confers the right to Lessee to place non-permanent improvements consistent with the approved Mine Operating Plan as required under the provisions of Article 21. Upon the expiration, termination or abandonment of this Lease, Lessee shall be obligated to

remove improvements consistent with Approved Reclamation Plan as required under the provisions of Article 22. To the extent that non-permanent improvements may remain following closure and reclamation as required under Article 22, Lessee shall have the right to remove the improvements if all monies owing to the State under the terms of this Lease have been paid.

Article 11
LESSEE'S COOPERATION; INGRESS AND EGRESS

11.1 **Reasonable Department Ingress**. Representatives of the Department may enter, and Lessee shall maintain access to the Leased Land at reasonable times to inspect the workings, improvements and other facilities used to extract or sever minerals from Leased Land. Representatives of the Department may enter at reasonable times to obtain factual data or access to records pertinent to mineral production required to be kept under the terms of this Lease and otherwise ascertain compliance with the law and the terms of this Lease.

11.2 **Reasonable Notice**. Inspections, investigations, and audits conducted under Article 11.1 shall be on reasonable notice to Lessee unless reasonable grounds exist to believe that notice would frustrate the enforcement of the law or the terms of this Lease.

11.3 **Lessee Appearance at Commissioner's Office**. The Commissioner may require Lessee to appear at reasonable times and on reasonable notice at the Commissioner's office and produce such records and information as are specified in the notice to determine compliance with the terms of this Lease.

11.4 **Lessee Cooperation**. Lessee shall cooperate with Lessor in Lessor's inspection, appraisal and management of the Leased Land and permit reasonable access by Lessor's employees to isolated State Land across Lessee's private land during the term of this Lease.

11.5 **Lessee Interference**. Lessee shall not unreasonably interfere with the authorized activities of Lessor's employees, agents, other lessees, and permittees or right-of-entry holders on the Leased Land.

11.6 **Established Rights-of-Way**. This Lease is made subject to all legally established rights-of-way heretofore granted or that may hereafter be granted over and across the Leased Land.

11.7 **Ingress and Egress to Other State Lands**. This Lease confers the right of ingress and egress to other State land, whether or not leased for purposes other than mining.

Article 12
LOSS OR WASTE

12.1 **Lessee Waste**. Lessee shall not cause, nor grant permission to another to cause, any waste (destruction, misuse, alteration, or neglect) in or upon the Leased Land. This provision does not apply to activities authorized by this Lease that are subject to the reclamation and environmental requirements of this Lease.

Article 13
NATIVE PLANTS AND CULTURAL RESOURCES

13.1 **Native Plants**. Lessee shall not move, use, destroy, cut or remove or permit to move any used, destroyed, or cut timber, cactus, native plants, standing trees or products of the land except that which is necessary for the use of the Leased Land, and then only with the prior written approval of Lessor. Lessee must submit a plant survey prior to the removal of any native plants. If the removal or destruction of plants protected under the Arizona Native Plant Law (A.R.S. § 3-901 et seq., or any successor statutes) is necessary to the use of the Leased Land, Lessee shall also obtain written approval of the Arizona Department of Agriculture. In the event Lessee removes the native plants, Lessee must pay a vegetation fee to Lessor and this fee is not a reimbursable improvement. Lessee is responsible for treatment of all regulated and restricted noxious weeds listed by the Arizona Department of Agriculture.

13.2 **Invasive Species**. Measures to limit the introduction of invasive species and any additional non-native species will be accomplished using Best Management Practices. This will include the use of certified weed-free straw or fiber roll logs for use in reclamation and/or sediment containment.

13.3 **Cultural Resources**. Prior to initiating any operation or activity requiring surface or ground disturbance, Lessee shall comply with all conditions and provisions of the most recently approved plans and agreements associated with the National Historic Preservation Act of 1996. If prehistoric or historic features, artifacts or properties, vertebrate paleontological sites, including fossilized footprints, inscriptions made by human agency or any other archaeological, paleontological or historical feature are encountered, Lessee shall immediately cease all work in the immediate vicinity of the encounter and notify and consult with the State Historic Preservation Office (SHPO), the Arizona State Museum (ASM) and the Department regarding avoidance, preservation, recovery and/or curation.

Lessee further agrees that:

13.3.1 Lessee shall ensure that all cultural resource investigations on the Leased Land are permitted pursuant to A.R.S. §41-841, et seq., and that the investigations and resulting reports satisfy the terms of the permit.

13.3.2 Lessee shall ensure that two copies of the report describing the results of the completed cultural resource survey of the Leased Land are submitted to Lessor for Lessor's use in consulting with SHPO pursuant to A.R.S. §41-861, et seq.

13.3.3 Lessee shall cause no surface disturbance within the boundaries of any known archaeological sites without Lessor approval.

13.3.4 If any previously unknown human remains, funerary objects, sacred ceremonial objects or objects of tribal patrimony, archaeological, paleontological or historical site or object that is at least 50 years old are encountered during surface disturbing activities, Lessee shall cease operations immediately and report the discovery to Lessor and to the Director of the ASM pursuant to A.R.S. §41-844.

13.3.5 At any and all times that ground disturbing activities are being performed on the Leased Land, Lessee shall have a qualified archaeologist on site to monitor the operations and insure compliance with the provisions of Article 13.3.

Article 14
PROTECT LAND, PRODUCTS AND IMPROVEMENTS

14.1 **Reasonable Means**. Lessee is hereby authorized to use means which are reasonable and which do not result in a breach of the peace or in creating a concealed hazard, to protect the Leased Land and improvements against waste, damage and trespass. In the event of known trespass on the Leased Land resulting in damage thereto, Lessee shall make reasonable efforts to notify Lessor and appropriate law enforcement authorities.

14.2 **Fencing**. Lessee shall, at its expense, fence all shafts, prospect holes, adits, tunnels, process ponds and other dangerous mine workings for the protection of public health and safety and livestock.

14.3 **Compliance with Applicable Regulations**. Lessee shall comply with all requirements of any governmental agency having jurisdiction over Lessee's activities on the Leased Land.

Article 15
RESERVATIONS, RELINQUISHMENTS TO UNITED STATES

15.1 **Rights-of-Ways and Easements**. Lessor reserves the right to grant rights-of-way, easements and sites over, across, under or upon the Leased Land for public highways, railroads, utility lines, pipelines, irrigation works, flood control, drainage works and other purposes.

15.2 **Relinquishing Lands for Federal Projects**. Lessor reserves the right to relinquish to the United States land needed for irrigation works in connection with a government reclamation project and to grant or dispose of rights-of-way and sites, for canals, reservoirs, dams, power or irrigation plants or works, railroads, tramway, transmission lines or any other purpose or use on or over the Leased Land.

15.3 **Compensation Waiver**. In the event of such relinquishment, grants or disposals, Lessee waives all right to any compensation whatsoever against Lessor except as may be allowed under the provisions of Article 16 and as limited therein.

Article 16
CONDEMNATION

16.1 **Division of Condemnation Awards**. Lessor, any pertinent leasehold mortgagees and, if Lessee is not in default, Lessee, shall cooperate in prosecuting and collecting their respective claims for an award on account of a taking of all or any portion of the Leased Land and all damages or awards (with any interest thereon) to which Lessor, Lessee or any pertinent leasehold mortgagees may be entitled by reason of any taking of all or any portion of the Leased Land (herein referred to as "Condemnation Proceeds"). In the event of the taking or condemnation by any competent authority for any public or quasi-public use or purpose of all or any portion of the Leased Land at any time during the Lease Term, the rights of Lessor, Lessee, or any leasehold mortgagees, to share in the net proceeds of any award for land, buildings, improvements and damages upon any such taking, shall be apportioned as follows:

(i) Lessee shall receive that portion attributed to the then fair market value of the buildings and improvements constructed thereon and Lessee shall receive the fair market value immediately prior to such taking of Lessee's leasehold interest in the Leased Land so taken;

(ii) Lessor shall receive the fair market value of its reversionary interest under this Lease (exclusive of any value attributable to improvements).

The entire amount of the award, settlement or payment attributable to the value of buildings and improvements shall belong to Lessee.

16.2 Lease Termination. If the whole or materially all of the Leased Land shall be taken or condemned by a competent authority, this Lease shall cease and terminate and all rental, additional rent and other charges hereunder shall be apportioned as of the date of vesting of title in such taking or condemnation proceedings. For the purposes of this Article, a taking or condemnation of materially all of the Leased Land, as distinguished from a taking or condemnation of the whole of the Leased Land, means a taking of such scope that: (a) the untaken portion of the Leased Land is not reasonably usable for Lessee's purposes or is insufficient to permit the reclamation of the then existing improvement thereon or is insufficient to permit the recovery of the cost of reclamation of the then existing improvements thereon, or (b) the remaining untaken portion of the Leased land and the improvements thereon are incapable of producing a proportionately fair and reasonable net annual income, taking into consideration the payment of all operating expenses thereof including but not limited to the net rental, additional rental and all other charges herein reserved and after the performance of all covenants, agreements and provisions herein provided to be performed by Lessee. The determination of what constitutes a fair and reasonable net annual income shall be governed by reference to the average net annual income produced by the Leased Land during the five-year period immediately preceding the taking (or, if the taking occurs during the first five years of the Lease Term, during the Lease Term to date). As used above, the term "operating expenses" does not include depreciation or income taxes. If there is any controversy as to whether materially all of the Leased Land has been taken, the controversy shall be resolved by arbitration.

If materially all of the Leased Land are taken or condemned, then Lessee, at its option, upon thirty (30) days prior notice to Lessor, given at any time within ninety (90) days after the vesting of title in the condemnor, may cancel and terminate this Lease as to the entire Leased Land. The rent and other charges hereunder shall be prorated as of this date of termination.

16.3 No Termination of Lease. In the event of a partial taking or condemnation, i.e. a taking or condemnation of less than materially all of the Leased Land, this Lease (except as hereinafter provided) shall nevertheless continue, but the rent for the Lease Year in which such condemnation occurs shall be pro-rated as of the date of such condemnation and that portion of the rent attributable to that portion of the Leased Land so taken shall be credited to Lessee's obligations next arising under this Lease and the rent shall be reduced proportionately to reflect the loss of the land taken.

16.4 Temporary Taking of Lease. If the whole or any part of the Leased Land or of Lessee's interest under this Lease be taken or condemned by any competent authority for its or their temporary use or occupancy for a period which is fewer than four (4) months, this Lease shall not terminate by reason thereof and Lessee shall continue to pay, in the manner and at the times herein specified, the full amounts of the rent and all additional rent and other charges payable by Lessee hereunder, and, except only to the extent that Lessee may be prevented from so doing pursuant to the terms of the order of the condemning authority, to perform and observe all of the other terms, covenants, conditions and obligations hereof upon the part of Lessee to be performed and observed, as though such taking or condemnation had not occurred. If the whole or any part of the Leased Land or Lessee's interest in this Lease be taken or condemned by a competent authority for its or their temporary use or occupancy for a period which is in excess of four (4) months, this Lease may be terminated at the option of Lessee upon notice given within thirty (30) days of the taking or condemnation. Notwithstanding anything to the contrary herein, in the event of any temporary taking or condemnation Lessee shall, if this Lease has not been terminated as provided in this Article, be entitled to receive the entire amount of any award made for such taking or condemnation, whether paid by way of damages, rent or otherwise, unless such period of temporary use or occupancy shall extend to or beyond the Expiration Date, in which case such award shall be apportioned between Lessor and Lessee as of such Expiration Date.

Article 17
USE OF WATER

17.1 **Groundwater Rights**. Lessee shall be entitled to the use on the Leased Land of groundwater as defined in A.R.S. §45-101, or any successor statute, for purposes consistent with this Lease. Lessee shall obtain all required permits from the Arizona Department of Water Resources ("ADWR"). If Lessee shall develop any groundwater on the Leased Land, Lessee shall not acquire any rights with respect to the groundwater, except the right to use such water in accordance with applicable law, on the Leased Land during this Lease.

17.2 **Alternate Groundwater Source**. If Lessee uses, on the Leased Land, groundwater, or water from other sources, that use shall not (1) cause such water or any rights with respect to that water to be appurtenant to the Leased Land, or (2) affect in any way Lessee's rights with respect to the water, or unlawfully degrade groundwater quality.

17.3 **Well Abandonment**. Prior to the Lessee vacating the Leased Land, Lessee agrees to contact the Department to confirm whether the well(s) are required to be abandoned or capped. If requested by the Department, the Lessee may be required to conduct groundwater quality analysis. All fees associated with well capping, abandonment, and groundwater quality analysis shall be borne by the Lessee.

17.4 **Surface Water Rights**. The rights of Lessor and Lessee concerning the application for an establishment of any rights with respect to surface water as defined in A.R.S. §45-101, or any successor statute, shall be governed by State law.

17.5 **Validity of Surface Water Rights**. Nothing in the provisions of this Lease shall affect the validity of any rights established by or for Lessor or Lessee with respect to surface water, as defined in A.R.S. §45-101, prior to the commencement date of this Lease.

17.6 **Establishment of Water Rights**. The application for and establishment by Lessor or Lessee (as agent of the State of Arizona) of any surface or groundwater rights shall be in the name of the State of Arizona (Arizona State Land Department), and; such rights shall attach to and become appurtenant to the Leased Land in accordance with the provisions of A.R.S. Title 45, Chapters 1 and 2.

17.7 **Lessor Notification**. Lessee shall promptly notify Lessor in writing of any initial filings made by Lessee with any governmental agency or court concerning the establishment or adjudication of any claim to a water right relating to the Leased Land. Upon request of Lessor, Lessee shall furnish copies of any document filed with the agency or court.

17.8 **Annual Report**: The ADWR requires an annual report of groundwater pumped from non-exempt well(s) within both Active Management Areas and Irrigation Non-Expansion Areas. If applicable, Lessee shall submit to ADWR the Annual Water Withdrawal and Use Report and associated fees within the time period specified by ADWR. Lessee shall provide a copy of such report to Lessor.

17.9 **Water Use Not Beneficial to Lease**. If Lessee desires to move groundwater off the Leased Land, or use groundwater for purpose(s) different from those stated in this Lease, Lessee shall file an application with Lessor for a public auction water sale. Movement of groundwater from the Leased Land prior to a public auction is prohibited.

17.10 **Guarantee of Availability or Quality**. Lessor, by issuing this Lease, makes no guarantee with respect to groundwater availability or groundwater quality.

17.11 **Lessor's Access**. Lessee shall provide the Lessor's personnel access to well(s) on the Leased Land.

Article 18
DEFAULT AND CANCELLATION

18.1 **Default Definition**. Violation by Lessee of any provision of this Lease shall be a default hereunder entitling Lessor to any and all remedies it may have under State law.

18.2 **Lease Cancellation**. Upon any such default, this Lease may be canceled pursuant to A.R.S. §37-289 or any successor statute.

18.3 **Cancellation for Conflict of Interest**. Pursuant to A.R.S. § 38-511, the State or any department or agency of the State may, within three years after its execution, cancel any lease, without penalty or further obligation, made by the State or any of its departments or agencies if any person significantly involved in initiating, negotiating, securing, drafting or creating the lease on behalf of the State or any of the departments or agencies of the State, is at any time while the lease is in effect, an employee or agent of any other party to the lease in any capacity or a consultant to any other party of the lease with respect to the subject matter of the lease. A cancellation made pursuant to this provision shall be effective when Lessee receives written notice of the cancellation unless the notice specifies a later time. (moved from 23.12)

18.4 **Lessee Lease Termination**. Lessee may terminate this Lease at any time during its term by giving the Commissioner thirty (30) days written notice of the termination, if Lessee is not delinquent in the payment of rent, royalty or appraisal fees to the date of termination, and if the Leased Land has been reclaimed to a condition satisfactory to the Commissioner.

Article 19
INDEMNIFICATION AND INSURANCE

19.1 **Lessee Defense of Actions or Proceedings**. In case an action or proceeding is brought against Lessor by reason of any such occurrence, Lessee, upon Lessor's request and at Lessee's expense, will resist and defend such action or proceedings, or cause the same to be resisted and defended either by counsel designated by Lessee or, where such occurrence is covered by liability insurance, by counsel designated by the insurer.

19.2 **Indemnification of State of Arizona**. To the extent allowed by law, Lessee shall defend, indemnify and hold harmless the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees (hereinafter for Article 19 referred to as "State of Arizona") from and against any and all claims, actions, liabilities, damages, losses, or expenses (including court costs, attorneys' fees, and costs of claim processing, investigation and litigation) (hereinafter referred to as "Claims") for bodily injury or personal injury (including death), or loss or damage to tangible or intangible property caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of Lessee or any of its owners, officers, directors, agents, employees or sublessees, arising out of or related to Lessee's occupancy and use of the Leased Land. It is the specific intention of the parties that the State of Arizona shall, in all instances, except for Claims arising solely from the negligent or willful acts or omissions of the State of Arizona, be indemnified by Lessee from and against any and all claims. It is agreed that Lessee will be responsible for primary loss investigation, defense and judgment costs where this indemnification is applicable. This indemnity shall not apply if the Lessee or sublessee(s) is/are an agency, board, commission or university of the State of Arizona.

19.3 A. **Minimum Scope and Limits of Insurance**. Lessee shall procure and maintain until such time as all obligations under the terms of this Lease are met, insurance against claims for injury to persons or

damage to property which may arise from or in connection with the Lease.

The insurance requirements herein are minimum requirements for this Lease and in no way limit the indemnity covenants contained in this Lease. The State of Arizona in no way warrants that the minimum limits contained herein is sufficient to protect the Lessee from liabilities that might arise out of the performance of this Lease. Lessee is free to purchase additional insurance.

Lessee shall provide coverage with limits of liability not less than those stated below.

1. **Commercial General Liability (CGL) – Occurrence Form**

   Policy shall include bodily injury, property damage, personal and advertising injury, Explosion, Collapse, and Underground (XCU), and products and completed operations.

   - General Aggregate $2,000,000
   - Products – Completed Operations Aggregate $1,000,000
   - Personal and Advertising Injury $1,000,000
   - Damage to Rented Premises $ 50,000
   - Each Occurrence $1,000,000

   a. The policy shall be endorsed, as required by this Lease, to include the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees as additional insureds with respect to liability arising out of the use and/or occupancy of the Leased land.

   b. Policy shall contain a waiver of subrogation endorsement as required by this Lease in favor of the State of Arizona, and its departments, agencies, boards, commissions, universities, and its officers, officials, agents, and employees for losses arising out of the use and/or occupancy of the Leased Land.

2. Excess/Umbrella Liability in the minimum amount of $5,000,000 to follow form the primary CGL policy.

3. **Business Automobile Liability**. To cover all owned, hired and/or non-owned of Lessee in the minimum amount of $1,000,000.

   NOTE LIMIT:
   If hazardous materials are to be transported $5,000,000

   *If the Lease includes hazardous materials transportation, the automobile liability policy shall include the following endorsements:

   - CA 99-48 Pollution Liability – broadened coverage for covered autos
   - MCS-90 (Motor Carrier Act) – endorsements

   a. The policy shall provide **Automobile Pollution Liability** specific to the transportation of hazardous materials.

   The policy shall be endorsed as required by this Lease, to include the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees as additional insureds with respect to liability arising out of the activities performed by or on behalf of the Lessee, involving automobiles owned, leased, hired or borrowed by the Lessee.

   Policy shall contain a waiver of subrogation endorsement as required by this Lease in favor of the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees for losses arising from work performed by or on behalf of the Lessee.

4. **Worker's Compensation and Employers' Liability**

• Workers' Compensation	Statutory
• Employers' Liability	
Each Accident	$1,000,000
Disease – Each Employee	$1,000,000
Disease – Policy Limit	$1,000,000

a. Policy shall contain a waiver of subrogation endorsement as required by this Lease in favor of the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees for losses arising from work performed by or on behalf of the Lessee.

b. This requirement shall not apply to: Separately, EACH contractor or subcontractor exempt under A.R.S. § 23-901, AND when such contractor or subcontractor executes the appropriate waiver (Sole Proprietor/Independent Contractor) form.

5. **Contractor's (Lessee's) Pollution Liability**

For losses caused by pollution conditions that arise from the operations of the Lessee as described in this lease, Lessee shall also require its contractor(s) to provide coverage for activities performed by or on behalf of the Lessee.

Each Occurrence	$10,000,000
General Aggregate	$10,000,000

a. Coverage must be ***identified as specific to the operations*** as described in the Lease.

b. Must include coverage pollution losses arising out of completed operations.

c. The policy should be written on an "occurrence" basis with no sunset clause.

d. Pollution coverage must apply to all phases of the work described in the Lease.

e. The policy shall include coverage for bodily injury, sickness, disease, mental anguish or shock sustained by any person, including death and medical monitoring costs.

f. The policy shall include coverage for property damage including physical damage to or destruction of tangible property and the resulting loss of use thereof, clean-up costs, and the loss of use of tangible property that has not been physically damaged or destroyed including diminution in value.

g. The policy shall include coverage for Environmental damage including physical damage to soil, surface water or ground water, or plant or animal life, caused by Pollution Conditions and giving rise to Cleanup Costs.

h. The policy shall include defense including costs, charges and expenses incurred in the investigation, adjustment or defense of claims for such compensatory damages.

i. The policy shall include coverage for asbestos and lead, mold, and no exclusions.

j. The policy shall include Non-Owned Disposal Site coverage.

k. The policy shall be endorsed as required by this Lease to include the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees as additional insureds with respect to liability arising out of the activities performed by or on behalf of the Lessee.

l. Policy shall contain a waiver of subrogation endorsement as required by this Lease in favor of the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees for losses arising from work performed by or on behalf of the Lessee.

m. Should any of the work involve treatment, storage or disposal of hazardous wastes, the Lessee shall furnish an insurance certificate from the disposal facility establishing that the facility operator maintains current Pollution Legal Liability Insurance in the amount of not less than $10,000,000 per occurrence / $10,000,000 annual aggregate and will cover sudden and gradual pollution losses arising from the facility, associated with work performed under this Lease.

Minimum Scope of Coverage: For pollution losses arising from the Lessee's operation, coverage shall apply to sudden and gradual pollution conditions including the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon land, the atmosphere or any watercourse or body of water, which results in Bodily Injury or Property Damage. The policy should include the following coverages:

i. Bodily injury, sickness, disease, mental anguish or shock sustained by any person, including death and medical monitoring costs

ii. Property damage, including physical injury to or destruction of tangible property including the resulting loss of use thereof, clean-up costs, and the loss of use of tangible property that has not been physically injured or destroyed and diminution in value.

6. Pollution Legal Liability

Lessee shall provide coverage and cause its contractor(s) to provide coverage as required for the acceptance, storage or disposal of any hazardous materials, with limits of at least:

Each Occurrence	$10,000,000
Annual Aggregate	$10,000,000

a. Coverage must be ***identified as specific to the operations and specific site(s)*** described in the Lease.

b. Pollution coverage must apply to all locations utilized for the acceptance, storage or disposal of any hazardous materials

c. The policy shall include bodily injury, sickness, disease, mental anguish or shock sustained by any person, including death and medical monitoring costs.

d. The policy shall include property damage including physical damage to or destruction of tangible property including the resulting loss of use thereof, clean-up costs, and the loss of use of tangible property that has not been physically damaged or destroyed.

e. For losses that arise from the disposal facility that is accepting hazardous material, coverage shall apply to sudden and non-sudden pollution conditions including the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon land, the atmosphere or any watercourse or body of water, which results in cleanup costs, bodily injury or property damage.

f. The policy shall include defense, including costs, charges and expenses incurred in the investigation, adjustment or defense of claims for such compensatory damages.

g. The policy shall be endorsed as required by this Lease, to include the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees as additional insureds with respect to liability arising out of the activities performed by or on behalf of the Lessee.

h. Policy shall contain a waiver of subrogation endorsement as required by this Lease in

favor of the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees for losses arising from work performed by or on behalf of the Lessee.

B. Additional Insurance Requirements. The policies shall include, or be endorsed to include, these provisions:

1. The State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees wherever additional insured status is required. Such additional insured shall be covered to the full limits of liability purchased by Lessee, even if those limits of liability are in excess of those required by this Lease

2. Lessee's insurance coverage shall be primary insurance with respect to all other available sources.

3. Coverage provided by Lessee shall not be limited to the liability assumed under the indemnification provisions of this Lease.

4. If Lessee's Contractors and/or Subcontractors do not have or cannot obtain such coverage, Lessees' certificate(s) may include all its Contractors/Subcontractors as insureds under its policies or Lessee shall be responsible for ensuring and/or verifying that all Contractors/Subcontractors have collectable insurance as evidenced by the certificates of insurance and endorsements for each Contractor/Subcontractor. All coverages for Contractors/Subcontractors shall be subject to the applicable insurance requirements identified above. The Department reserves the right to require, at any time, proof from the Lessee that its Contractors/Subcontractors have the required coverage.

C. Notice of Cancellation: Each insurance policy required by the insurance provisions of this Lease shall not be suspended, voided, cancelled, reduced in coverage or in limits except after thirty (30) days' prior written notice has been given to the State of Arizona. Such notice shall be sent directly to:

Minerals Section
Arizona State Land Department
1616 West Adams Street
Phoenix, Arizona 85007

and shall be sent by certified mail, return receipt requested.

D. Acceptability of Insurers. Lessee's insurance shall be placed with companies licensed in the State of Arizona or hold an approved non-admitted status on the Arizona Department of Insurance List of Qualified Unauthorized Insurers. Insurers shall have an "A.M. Best" rating of not less than A- VII. The State of Arizona in no way warrants that the above-required minimum insurer rating is sufficient to protect the Contractor from potential insurer insolvency.

E. Verification of Coverage. Lessee shall furnish Lessor with certificates of insurance (ACORD form or equivalent approved by the State of Arizona) as required by this Lease. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements are to be received and approved by Lessor before the Lease Term commences. Each insurance policy required by this Lease must be in effect at or prior to the commencement of this Lease and must remain in effect for the duration of this Lease. Failure to maintain the insurance policies as required by this Lease or to provide timely evidence of renewal will be considered a material breach of this Lease. All certificates required by this Lease shall be sent directly to the Department. The Department's Lease number (11-26500) and location description of the Leased Land are to be noted on the certificate of insurance. Lessor reserves the right to require complete, certified copies of all insurance policies and endorsements required by this Lease at any time.

F. **Modifications:** Any modification or variation from the insurance requirements in this Lease shall be made by the Lessor in consultation with the Arizona Department of Administration, Risk Management Division. Such action will not require a formal Lease amendment, but may be made by administrative action.

G. **Approval:** The Lessor reserves the right to review, or make modifications to the insurance limits, required coverages or endorsements throughout the life of this Lease as deemed necessary. In such event, the Lessor shall provide the Lessee with written notice of such and the Lessee shall comply within thirty (30) days of receipt thereof.

Article 20
ENVIRONMENTAL MATTERS

20.1 **Definition of Regulated Substances and Environmental Laws**. For purposes of this Lease, the term "Environmental Laws" shall include but not be limited to any relevant federal, state or local environmental laws, and the regulations, rules and ordinances relating to environmental matters, and publications promulgated pursuant to the federal, state and local laws and any rules or regulations relating to environmental matters applicable to Lessee's operations on the Leased Land. For the purpose of this Lease, the term "Regulated Substances" shall include but not be limited to substances defined as "regulated substance," "solid waste," "hazardous waste," "hazardous materials," "hazardous substances," "toxic materials," "toxic substances," "inert materials," "pollutants," "toxic pollutants," "herbicides," "fungicides," "rodenticides," "insecticides," "contaminates," "pesticides," "asbestos," "environmental nuisance," "criminal littering," or "petroleum products" as defined in Environmental Laws.

20.2 **Compliance with Environmental Laws**. Lessee shall strictly comply with all applicable Environmental Laws, including, without limitation, water quality, air quality, and handling, transportation, storage, treatment, or disposal of any Regulated Substance on, under, or from the Leased Land. Without limiting the foregoing, compliance includes that Lessee shall: (i) comply with all reporting obligations imposed under Environmental Laws; (ii) obtain and maintain all permits required by Environmental Laws and provide copies to Lessor within ten business days of receipt of the permits; (iii) provide copies of all documentation relating to the Leased Land as required by Environmental Laws to Lessor within ten business days of Lessee's submittal and/or receipt of the documentation; (iv) during the Term of this Lease, provide copies of all information it receives or obtains regarding any and all environmental matters relating to the Leased Land, including but not limited to environmental audits relating to the Leased Land regardless of the reason for which the information was obtained or whether or not the information was required by Environmental Laws; and (v) prevent treatment, storage, disposal, handling or use of any Regulated Substances within the Leased Land without prior written authorization from Lessor. The permitted use of Regulated Substances in the performance of lease activities shall not exempt future obligation of Lessee to remediate any environmental condition that may result from such use. Lessor retains full right to require future remediation or restoration.

20.3 **Designated Compliance Officer**. Lessee at all times shall employ or designate an existing employee, consultant or representative (the "Designated Compliant Officer") who is responsible for knowing all Environmental Laws affecting Lessee and Lessee's business and monitoring Lessee's continued compliance with applicable Environmental Laws. Upon request by Lessor, Lessee shall make the Designated Compliance Officer available to discuss Lessee's compliance, answer any questions, and provide such reports and confirming information as Lessor may reasonably request.

20.4 **Environmental Audit**. At any time, Lessor may request Lessee to provide an environmental audit of the Leased Land performed by an Arizona registered professional engineer or an Arizona registered geologist. Lessee shall pay the entire cost of the audit.

20.5 **Environmental Assessment**. At any time during the Term of this Lease, with reasonable cause, Lessor may require Lessee to obtain a Phase I environmental assessment of the Leased Land, performed in accordance with most current ASTM standard by an Arizona registered professional engineer or an Arizona registered geologist. If, based upon the Phase I environmental assessment or its own independent investigation, Lessor identifies any possible violation of Environmental Laws or the terms of this Lease, Lessor may require Lessee to conduct additional environmental assessments as Lessor deems appropriate for the purpose of ensuring that the Leased Land are in compliance with Environmental Laws. The Phase I assessment, or any other assessment required by Lessor, shall be obtained for the benefit of both Lessee and Lessor. A copy of the Phase I report shall be provided both to Lessee and Lessor. Lessor, in its sole discretion, shall have the right to require Lessee to perform additional assessments of any damage to the Leased Land arising out of any violations of Environmental Laws. If Lessee fails to obtain any assessment required by Lessor, Lessee shall pay the entire costs of any and all assessments required by Lessor, notwithstanding the expiration or termination of this Lease.

20.6 **Indemnity for Environmental Damage**. Lessee shall defend, indemnify and hold Lessor harmless from and against any and all liability, obligations, losses, damages, penalties, claims, environmental response and cleanup costs and fines, and actions, suits, costs, taxes, charges, expenses and disbursements, including legal fees and expenses of whatever kind or nature (collectively, "claims" or "damages") imposed on, incurred by, or reserved against Lessor in any way relating to or arising out of any non-compliance by Lessee, Lessee's successors or sublessees, with any Environmental Laws, the existence or presence from and after the Commencement Date of this Lease of any Regulated Substance, on, under, or from the Leased Land, and any claims or damages in any way relating to or arising out of the removal, treatment, storage, disposition, mitigation, cleanup or remedying of any Regulated Substance on, under, or from the Leased Land by Lessee, its agents, contractors, or subcontractors.

20.7 **Scope of Indemnity**. This indemnity shall include, without limitation, claims or damages arising out of any and all violations of Environmental Laws regardless of any real or alleged fault, negligence, willful misconduct, gross negligence, breach of warranty, or strict liability on the part of any of the indemnities. This indemnity shall survive the expiration or termination of this Lease and/or transfer of all or any portion of the Leased Land and shall be governed by the laws of the State.

20.8 **Lessee's Participation in the Defense**. In the event any action or claim is brought or asserted against Lessor which is or may be covered by this indemnity, Lessee shall fully cooperate and pay for the defense of the action or claim including but not limited to the following: (i) the conduct of any required cleanup, removal or remedial actions and/or negotiations, (ii) the conduct of any proceedings, hearings, and/or litigation, and (iii) the negotiation and finalization of any agreement or settlement. Lessor shall retain the right to make all final decisions concerning the defense.

20.9 **Restoration**. Prior to the termination of this Lease and in addition to those obligations set forth in this Lease, Lessee shall restore the Leased Land by removing or remediating any and all Regulated Substances to the satisfaction of the Lessor. In addition, the restoration shall include, but not be limited to, removal of all waste and debris deposited by Lessee. If the Leased Land or any portions thereof are damaged or destroyed from the existence or presence of any Regulated Substance or if the Leased Land or any portions thereof are damaged or destroyed in any way relating to or arising out of the removal, treatment, storage, disposition, mitigation, cleanup or remedying of any Regulated Substance, Lessee shall arrange, at its expense, for the repair, removal, remediation, restoration, and reconstruction to the Leased Land, and groundwater in accordance with the approved mine reclamation and closure plans under Article 22. In any event, any damage, destruction, or restoration by Lessee shall not relieve Lessee from its obligations and liabilities under this Lease. The insurance provisions within this Lease shall remain in place until such time as the required restoration is complete and approved by the regulatory authority and the Lessor.

Article 21
MINE OPERATING PLAN

21.1 **Approved Mine Operating Plan**. All development or mining operations, or any use of the Leased land shall be performed in a manner consistent with an approved Mine Operating Plan, submitted as part of Lessee's Mineral Development Report entitled "Mineral Extraction Operating Plan – Reclamation and Closure Plan" as revised March 13, 2014. The Approved Mine Operating Plan shall comply with Lessee's final, approved Temporary Individual Aquifer Protection Permit (No. P-106360), which Lessee must obtain from the Arizona Department of Environmental Quality ("ADEQ"). The Mine Operating Plan is to conform to the Department's plan requirements, and be submitted to and approved by the Department prior to the commencement of any operation upon the Leased Land.

21.2 **Lessee Performance**. Upon approval, Lessee shall perform all operations in a manner and time consistent with the Mine Operating Plan.

21.3 **Mine Operating Plan Amendments**. Amendments to the Mine Operating Plan must be filed with and approved by the Department whenever the operation deviates from previously approved plans, including mine expansion. Any amendments to the Mine Operating Plan will require changes to the Approved Reclamation Plan in Article 22.1 and may also require changes to the amount of the Reclamation Bond in Article 22.3. Upon completion of the Production Test Facility, and before Lessee starts the commercial phase of the mining operation, the Mine Operating Plan and Approved Reclamation Plan will require major amending or complete revision.

21.4 **Compliance of Agents and Subcontractors**. Lessee shall comply, and assure that its agents, sublessees and subcontractors comply with the applicable transportation laws and ordinances pertaining to operation of trucks on roadways and Lessee shall consult with the Arizona Department of Transportation to address safety issues.

21.5 **Overburden Piles**. Overburden piles resultant from mining shall be placed and maintained (with riprap if necessary) to prevent any eroded sediment from entering washes.

21.6 **Drainage Report**. Lessee shall prepare and submit to Lessor a drainage report which identifies appropriate steps required to control runoff, minimize erosion, maintain water quality and otherwise prevent any adverse impacts on perennial surface flow. Failure to comply with such requirements shall constitute a default hereunder. Such report is subject to Lessor's approval and Lessor may seek input from ADEQ. At no time will Lessee permit a permanent body of water, not identified in the ADEQ permit, to be maintained on the site; however it is acknowledged that heavy rain falls and/or wet seasons may result in storm water temporarily collecting on the Leased Land.

Article 22
RECLAMATION AND CLOSURE PLANS AND CONDITIONS

22.1 **Detailed Reclamation and Closure Plan**. Lessee shall not commence mining activities unless or until Lessor shall have approved in writing the Reclamation and Closure Plan ("Approved Reclamation Plan"), including any amendments thereto, submitted as part of Lessee's Mineral Development Report entitled "Mineral Extraction Operating Plan – Reclamation and Closure Plan" as revised March 13, 2014. The Approved Reclamation Plan shall comply with Lessee's final, approved Temporary Individual Aquifer Protection Permit (No. P-106360), which Lessee must obtain from ADEQ including the Closure and Post-Closure Plans. Reclamation shall include contouring and landscaping the land to match in a natural manner the surrounding native landscape and landforms and shall be performed concurrent with ongoing mining activities to the extent practicable. Reclamation shall include processes and procedures as identified in the Temporary Individual Aquifer Protection Permit, and as approved by the Lessor.

Reclamation shall also include contouring and landscaping all other portions of the State Trust land parcel disturbed by Lessee not specifically identified in or made part of the Approved Reclamation Plan.

22.2 **Final Reclamation**. Lessee shall complete final reclamation within one hundred twenty (120) days following the end of the Lease Term. Such final reclamation shall be in accordance with the Approved Reclamation Plan.

22.3 **Reclamation Bond.** Upon Lessor's approval of the Approved Reclamation Plan and prior to the commencement of mining activities, Lessee shall provide Lessor with a bond or other form of security to insure the full performance of Lessee's reclamation and closure activities. The form of such bond or security shall be subject to Lessor's written approval. The amount of the bond or security shall be $63,000.00. This amount is intended to cover reclamation of the approximately 14 acres of surface to be used by the Production Test Facility at a cost of $4,500.00 per acre. Upon completion of the Production Test Facility, and before Lessee starts the commercial phase of the mining operation, the amount of the bond or security will be reassessed. At Lessee's expense, Lessor may obtain the services of a consultant to help determine the amount and sufficiency of the new bond or security requirement based on the then-prevailing reclamation costs and the progress of Lessee's concurrent reclamation efforts. Lessor shall have the sole discretion to determine the acceptable amount of bond or security if conditions change during the term of this Lease. When Lessor notifies Lessee in writing of the acceptable amount of the bond or security, Lessee shall increase or decrease the bond or security within thirty (30) days thereafter.

Article 23
MISCELLANEOUS

23.1 **Lessee Rights**. This Lease grants Lessee only those rights expressly granted herein.

23.2 **Lease Governance**. This Lease shall be governed by, construed, and enforced according to State laws.

23.3 **Applicable Rules, Regulations, and Laws**. This Lease is subject to all current and subsequently enacted rules, regulations and laws applicable to State land as though fully set forth herein.

23.4 **Fee Interest**. No provisions of this Lease shall create any right or interest in Lessee to a fee interest in the Leased Land

23.5 **Non-Availability of Funds**. Every obligation of the State under this Lease is conditioned upon the availability of funds appropriated or allocated for the payment of such obligation. If funds are not allocated and available for the continuance of this Lease, this Lease may be terminated by the State at the end of the period where funds are available. No liability shall accrue to the State if this provision is exercised, and the State shall not be obligated or liable for any future payments or any damages as a result of termination under this paragraph.

23.6 **Non-discrimination**. Lessee shall comply with Executive Order 99-4, which mandates that all persons, regardless of race, color, religion, sex, age, national origin or political affiliation, shall have equal access to employment opportunities, and all other applicable State and federal employment laws, rules, and regulations, including the Americans with Disabilities Act. Lessee shall take affirmative action to ensure that applicants for employment and employees are not discriminated against due to race, creed, color, religion, sex, national origin or disability.

23.7 **Lessor Liability**. Lessor shall be forever wholly absolved from any liability for damages which might result to Lessee in the event this Lease is found to be void, canceled, forfeited or terminated prior to the Expiration Date or in the event this Lease is not renewed.

23.8 **Failure to Receive Title**. If, for any reason, it is determined that Lessor has failed to receive title to any of the Leased Land, this Lease is void insofar as it related to the Leased Land to which Lessor has failed to receive title. In such event Lessee waives all right to any compensation as against Lessor, except prorated reimbursement for prepaid rent.

23.9 **Reasonable Attorney's Fees**. In any action arising out of this Lease, the prevailing party shall recover reasonable attorneys' fees incurred therein in addition to the amount of any judgment, costs and other expenses as determined by the court. In the case of Lessor, reasonable attorneys' fees shall be calculated at the reasonable market value for such services when rendered by private counsel notwithstanding that it is represented by the Arizona Attorney General's Office or by other salaried counsel.

23.10 **Arbitration**. In the event of a dispute between the parties to this Lease, it is agreed to use arbitration to resolve the dispute but only to the extent required by A.R.S. §12-1518; and, in no event shall arbitration be employed to resolve a dispute which is otherwise subject to judicial review pursuant to A.R.S. §12-901, et seq., and administrative review by the Department pursuant to statute or Department Administrative Rule.

23.11 **Document Delivery Requirements**. Any notice to be given or other documents to be delivered by one party to the other shall be in writing and served by personal delivery or by depositing same in the United States mail, postage prepaid. Correspondence to the Department shall be addressed as follows:

Minerals Section
Arizona State Land Department
1616 West Adams Street
Phoenix, Arizona 85007

Correspondence to Lessee shall be made to the address of record as indicated following Lessee's signature line(s) herein. Each party is obligated to promptly notify the other party in writing of any change in the foregoing addresses. Notice shall be deemed adequate if sent to the last known address of record.

23.12 **Effective Lease Terms**. Any attempt to assign, sublease, convey, and transfer or otherwise dispose of any estate or interest in this Lease, for a time period that exceeds the Lease Term, shall not be effective and shall be cause for cancellation.

23.13 **Lessor Supervision**. The Department shall not be responsible for the supervision of any activities conducted under the terms of this Lease.

23.14 **Current Lease Agreement**. This Lease, together with all attached Appendices, embodies the whole agreement between the parties. This document supersedes all previous communications, representations and agreements, oral or written, between the parties. There are no other agreements or terms, oral or written.

23.15 **Lease Execution**. This document is submitted for examination. This is not an option or offer to lease or grant a permit. This document shall have no binding effect on the parties unless and until executed by Lessor (after execution by Lessee), and a fully executed copy is delivered to Lessee.

Article 24
ASSIGNMENT

24.1 **Lease Assignment**. Lessee, if not in default in the payment of any monies owed the State in regard to this Lease and having kept and performed all the conditions of this Lease, may, with the written consent of Lessor, assign this Lease.

24.2 **Filing Lease Assignments**. Copies of assignments pertaining to the Leased Land shall be filed with Lessor.

Article 25
RENEWAL

25.1 **Lease Renewal**. Upon application to the Department not less than thirty (30) nor more than one hundred and twenty (120) days prior to the Expiration Date, Lessee, if a bona fide resident of the State or legally authorized to transact business in the State, shall have a preferred right to renewal for a term as provided by law, bearing even date with the Expiration Date subject to requirements of A.R.S. § 37-284 and A.R.S. § 27-235 if applicable. The preferred right of renewal shall not extend to Lessee if there has not been substantial compliance with the terms of this Lease or if the Leased Land was not used as prescribed in this Lease, unless for good cause the failure to perform was given written authorization by the Department. If the Department determines the continued leasing of the land to Lessee is not in the best interest of the State, this Lease will not be renewed.

Article 26
HOLDOVER LESSEE

26.1 **Surrender of Possession**. Within one hundred twenty (120) days after expiration or termination of this Lease, Lessee agrees to surrender to Lessor peaceful and uninterrupted possession of the Leased Land. Holdover tenancy by Lessee is prohibited and shall be deemed a trespass for which Lessor may seek all appropriate legal remedies; except that Lessee if in good standing and who has filed a timely application for renewal may continue to occupy and use the Leased Land with Department approval, pursuant to the terms of this Lease, pending action on the renewal application by Lessor.

Appendix A
LEGAL DESCRIPTION

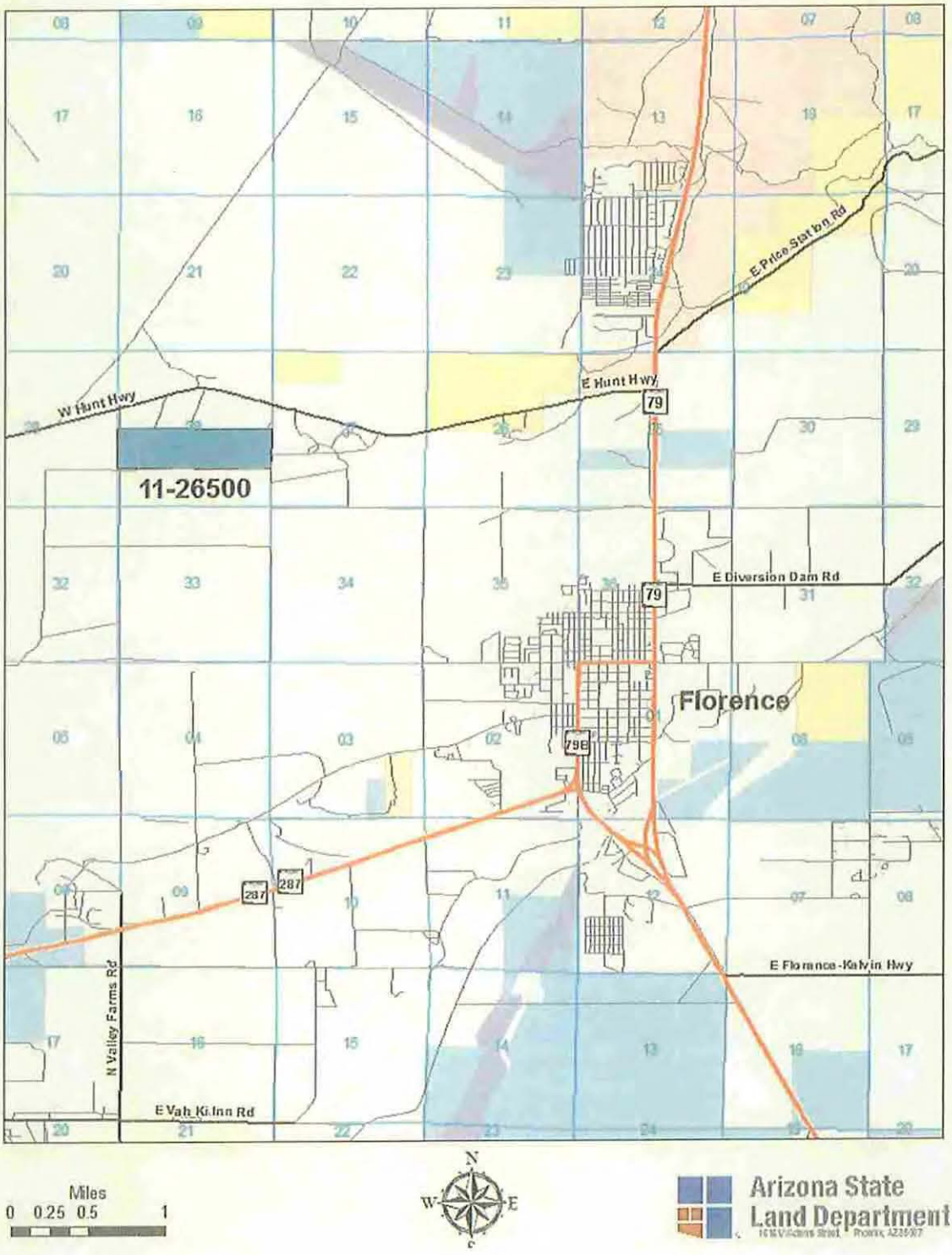
STATE OF ARIZONA LAND DEPARTMENT
1616 W. ADAMS
PHOENIX, AZ 85007

KE-LEASE#: 11-26500-00 APPTYPE: RENEWAL

AMENDMENT#: 0

LAND #	LEGAL DESCRIPTION	ACREAGE
T4S, R9E, S28	N2S2	160.00

Appendix B
GENERAL LOCATION MAP



IN WITNESS HEREOF, the parties hereto have signed this Lease effective the day and year set forth in Article 2.1

ARIZONA STATE LAND DEPARTMENT
State Land Commissioner

By: Janessa P. Hickman

(SEAL)

FLORENCE COPPER INC.
Lessee

Rita Negrini, Executive Vice President
Authorized Representative Title

December 15, 2014
Signature Date

1575 W. Hunt Hwy
Address

Florence, Az. 85132
City State Zip

Torren Valdez

From: Ian Ream <IanReam@florencecopper.com>
Sent: Friday, January 13, 2017 9:06 AM
To: Torren Valdez
Subject: Re: Map of monitor well locations

Hi Torren,

The pumps will be QED micro purge. They typically do a liter or two a minute. Very low flow. Looking for discreet interval samples. The flow rate is based on drawdown. The goal is not to draw down the well much more than a half a foot or 1 foot.

Thanks,

Ian Ream
Senior Hydrogeologist
Florence Copper

On Jan 13, 2017, at 8:56 AM, Torren Valdez <tvaldez@azwater.gov> wrote:

> Ian,
>
> Would you happen to know the pump capacity (gpm) for the low-flow pumps that will be installed on those monitoring wells?
>
> Thank you,
>
> **Torren Valdez**
> Water Planning & Permitting Division
> Arizona Department of Water Resources
> 602.771.8614
>
> <image002.jpg>
>
> ---
>
> **From:** Ian Ream [mailto:IanReam@florencecopper.com]
> **Sent:** Thursday, January 12, 2017 11:13 AM
> **To:** Torren Valdez <tvaldez@azwater.gov>
> **Subject:** Map of monitor well locations
>
> Hi Torren,
>
> Here is a map with the well locations.
>
> Please don't hesitate to contact me if you need anything else or have any questions.
>
> Cheers,
>
> Ian

Ian Ream Senior Hydrogeologist

<image003.jpg>

Florence Copper Inc.
1575 W. Hunt Highway Florence AZ USA 85132
C 520-840-9604 T 520-374-3984 F 520-374-3999
E ianream@florencecopper.com Web florencecopper.com

"Notice Regarding Transmission

This message is intended only for the person(s) to whom it is addressed and may contain information that is privileged and confidential. If you are not the intended recipient, you are hereby notified that any dissemination or copying of this communication is prohibited. Please notify us of the error in communication by telephone (778-373-4533) or by return e-mail and destroy all copies of this communication. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of Taseko Mines Limited or any affiliated or associated company. The recipient should check this email and any attachments for the presence of viruses. Neither Taseko Mines Limited nor any affiliated or associated company accepts any liability for any damage caused by any virus transmitted by this email. Thank you."

NOTICE

A.R.S. § 41-1030(B), (D), (E) and (F) provide as follows:

B. An agency shall not base a licensing decision in whole or in part on a licensing requirement or condition that is not specifically authorized by statute, rule or state tribal gaming compact. A general grant of authority in statute does not constitute a basis for imposing a licensing requirement or condition unless a rule is made pursuant to that general grant of authority that specifically authorizes the requirement or condition.

D. This section may be enforced in a private civil action and relief may be awarded against the state. The court may award reasonable attorney fees, damages and all fees associated with the license application to a party that prevails in an action against the state for a violation of this section.

E. A state employee may not intentionally or knowingly violate this section. A violation of this section is cause for disciplinary action or dismissal pursuant to the agency's adopted personnel policy.

F. This section does not abrogate the immunity provided by section 12-820.01 or 12-820.02.

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St. Suite 310
Engineering and Permits Division
Phoenix, AZ 85007
602-771-8500

NOTICE TO WELL DRILLERS

This is a reminder that a valid drill card be present for the drilling of each and every well constructed on a site.* The problem seems to occur during the construction of a well when an unexpected problem occurs. Either the hole collapses, the hole is dry, a drill bit is lost and can't be recovered, or any number of other situations where the driller feels that he needs to move over and start another well. If you encounter this type of scenario, please be aware drillers do not have the authority to start another well without first obtaining drilling authority for the new well. Please note the following statutes and regulations pertaining to well drilling and construction:

ARIZONA REVISED STATUTE (A.R.S.)

A.R.S. § 45-592.A.

A person may construct, replace or deepen a well in this state only pursuant to this article and section 45-834.01. The drilling of a well may not begin until all requirements of this article and section 45-834.01, as applicable, are met.

***

A.R.S. § 594.A.

The director shall adopt rules establishing construction standards for new wells and replacement wells, the deepening and abandonment of existing wells and the capping of open wells.

***

A.R.S. § 600.A

A well driller shall maintain a complete and accurate log of each well drilled.

ARIZONA ADMINISTRATIVE CODE (A.A.C.)

A.A.C. R12-15-803.A.

A person shall not drill or abandon a well, or cause a well to be drilled or abandoned, in a manner which is not in compliance with A.R.S. Title 45, Chapter 2, Article 10, and the rules adopted thereunder.

***

A.A.C. R12-15-810.A.

A well drilling contractor or single well licensee may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

***

A.A.C. R12-15-816.F.

In the course of drilling a new well, the well may be abandoned without first filing a notice of intent to abandon and without an abandonment card.

*** THIS REQUIREMENT DOES NOT PERTAIN TO THE DRILLING OF MINERAL EXPLORATION, GEOTECHNICAL OR HEAT PUMP BOREHOLES**

Transaction Receipt - Success

Arizona Water Resources
Arizona Water Resources
MID:347501639533
1700 W Washington St
Phoenix , AZ 85012
602-771-8454

01/11/2017 04:20PM
Remittance ID
Arizona011117181536095Ald
Transaction ID:
178069995

KELSEY SHERRARD
500 Maint St
WOODLAND, California 95695
United States
Visa - 3420
Approval Code: 040691

Sale
Amount: $1,800.00

55-226788, 55-226789, 55-226790, 55-226791, 55-226792, 55-226793, 55-226794, 55-226795, 55-226796, 55-226797, 55-226798, 55-226799
N/A
Cash Reciepts
0
palder@azwater.gov

Cardmember acknowledges receipt of goods and/or services in the amount of the total shown hereon and agrees to perform the obligations set forth by the cardmember's agreement with the issuer.

Signature Phone Order

click here to continue.

Printed: 1/11/2017 4:27:39 PM

Arizona Department of Water Resources

1110 West Washington Street, Suite 310
Phoenix AZ 85007

Customer:
KELSEY SHERRARD
500 MAIN STREET
WOODLAND, CA 95695

Receipt #: 17-49315
Office: MAIN OFFICE
Receipt Date: 01/11/2017
Sale Type: Mail
Cashier: WRPXA

Item No.	Function Code	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
8505	122221	4439-6F	MONITOR, PIEZOMETER, AIR SPARGING, SOIL VAPOR EXTR		12	150.00	1,800.00
						RECEIPT TOTAL:	**1,800.00**

Payment type: CREDIT CARD
Amount Paid: $1,800.00
Payment Received Date: 01/11/2017

Authorization 178069995

Notes: Credit card payment for $1,800.00 is for well registration numbers 55-226788, 55-226789, 55-226790, 55-226791, 55-226792, 55-226793, 55-226794, 55-226795, 55-226796, 55-226797, 55-226798, 55-226799

No refund without valid receipt

APPENDIX B

Geophysical Surveys

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M54-0
FIELD	FLORENCE COPPER
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: E-LOGS
MORE: NAT. GAMMA
LOCATION
SEC TWP RGE

OTHER SERVICES
TEMPERATURE
FLUID RESISTIVITY
SONIC
DEVIATION

PERMANENT DATUM	ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL	G.L.

DATE	2-6-17	TYPE FLUID IN HOLE	MUD
RUN No	2	MUD WEIGHT	N/A
TYPE LOG	E-LOGS - NAT. GAMMA	VISCOSITY	N/A
DEPTH-DRILLER	1210 FT.	LEVEL	FULL
DEPTH-LOGGER	1210 FT.	MAX. REC. TEMP.	30.78 DEG. C
BTM LOGGED INTERVAL	1210 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	A. OLSON / M. QUINONES	TOOL STRING/SN	MSI E-LOG 40GRP SN 5514
WITNESSED BY	CHAD - H&A	LOG TIME:ON SITE/OFF SITE	11:00 A.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	10 5/8 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	2-6-17	2-6-17	**Date**	2-6-17	
Run No.	1	2	**Run No.**	3	
Tool Model	MSI COMBO TOOL	MSI E-LOG 40GRP	**Tool Model**	MSI 60MM SONIC	
Tool SN	4183	5514	**Tool SN**	5001	
From	SURFACE	SURFACE	**From**	SURFACE	
To	1210 FT.	1210 FT.	**To**	1210 FT.	
Recorded By	A. OLSON	A. OLSON	**Recorded By**	A. OLSON	
Truck No	900	900	**Truck No**	900	
Operation Check	2-3-17	2-3-17	**Operation Check**	2-3-17	
Calibration Check	2-3-17	2-3-17	**Calibration Check**	N/A	
Time Logged	12:30 P.M.	1:30 P.M.	**Time Logged**	2:10 P.M.	

Date	2-6-17		**Date**		
Run No.	4	5	**Run No.**	6	
Tool Model	2DVA		**Tool Model**		
Tool SN	6002		**Tool SN**		
From	SURFACE		**From**		
To	1210 FT.		**To**		
Recorded By	A. OLSON		**Recorded By**		
Truck No	900		**Truck No**		
Operation Check	2-3-17		**Operation Check**		
Calibration Check	N/A		**Calibration Check**		
Time Logged	3:00 P.M.		**Time Logged**		

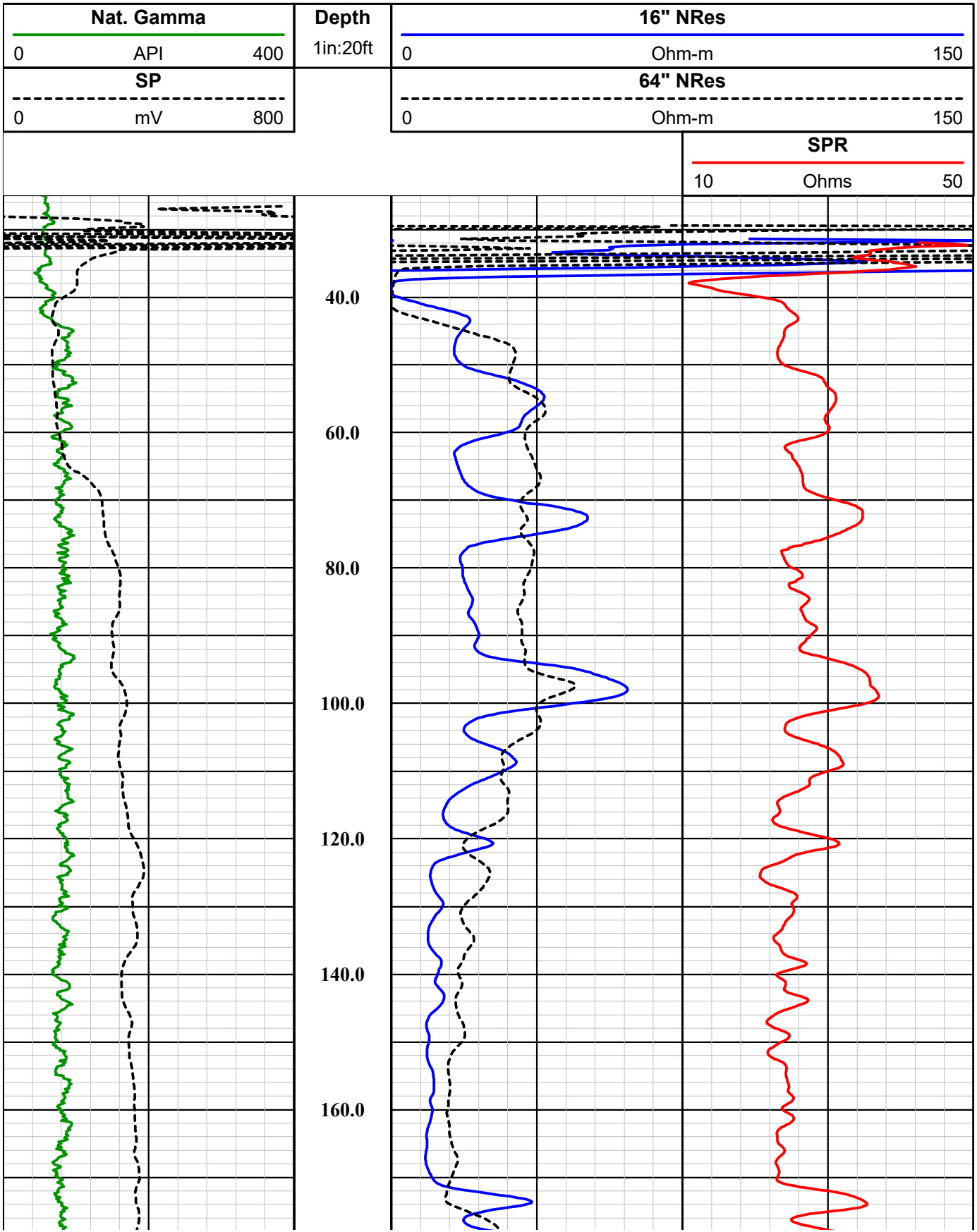
Additional Comments:

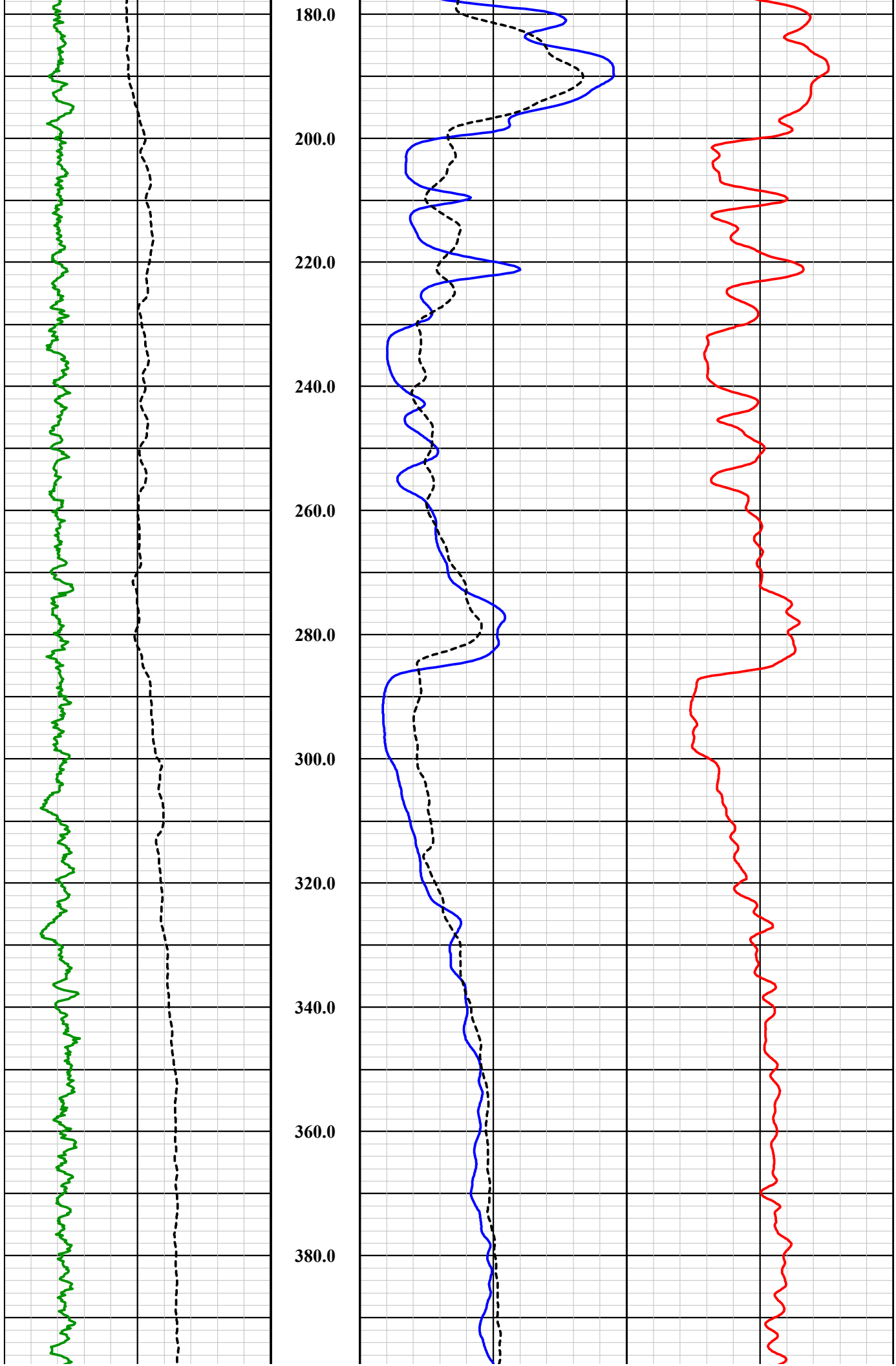
Caliper Arms Used: 15 IN. **Calibration Points:** 6 IN. & 12 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

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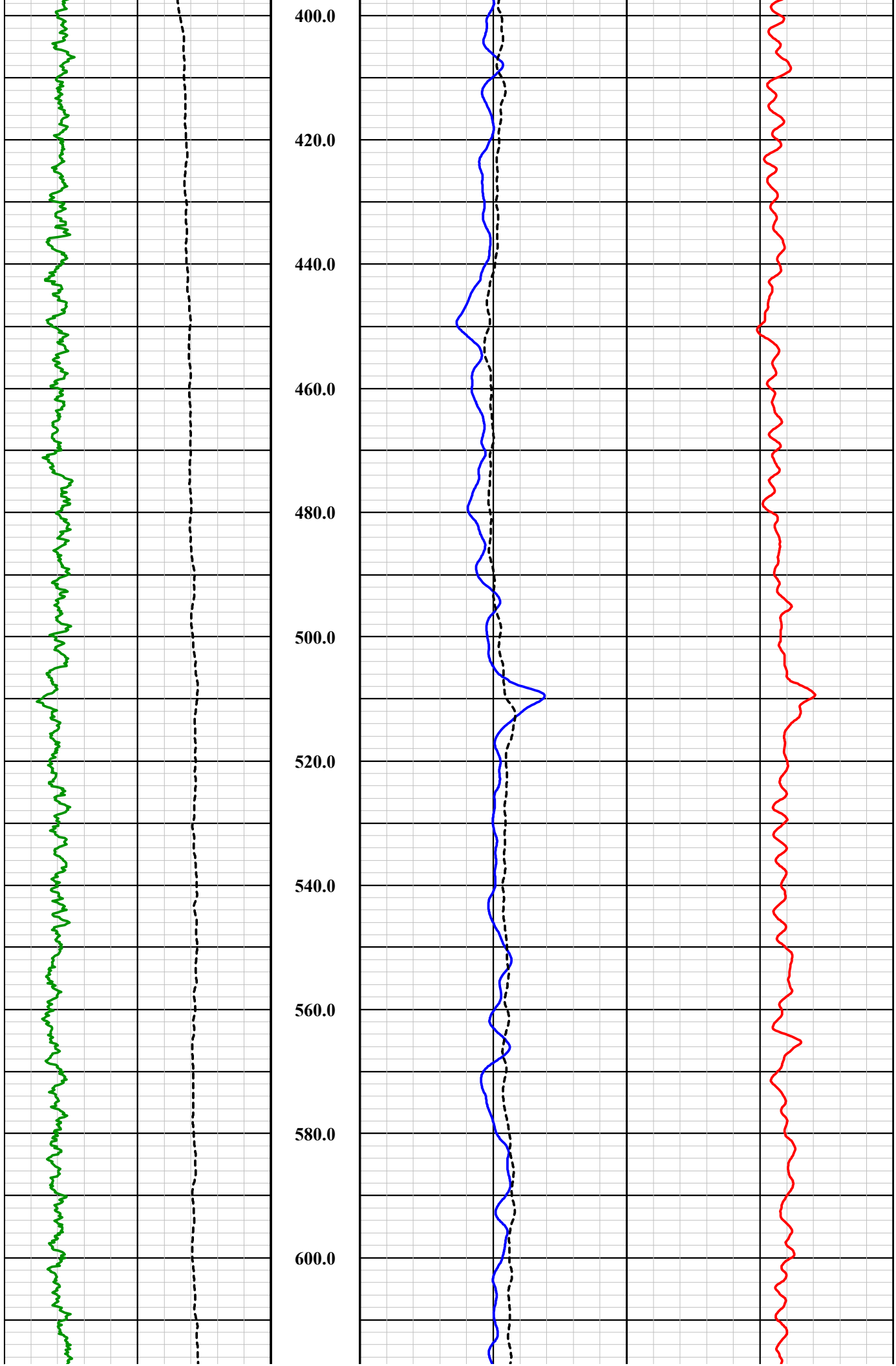
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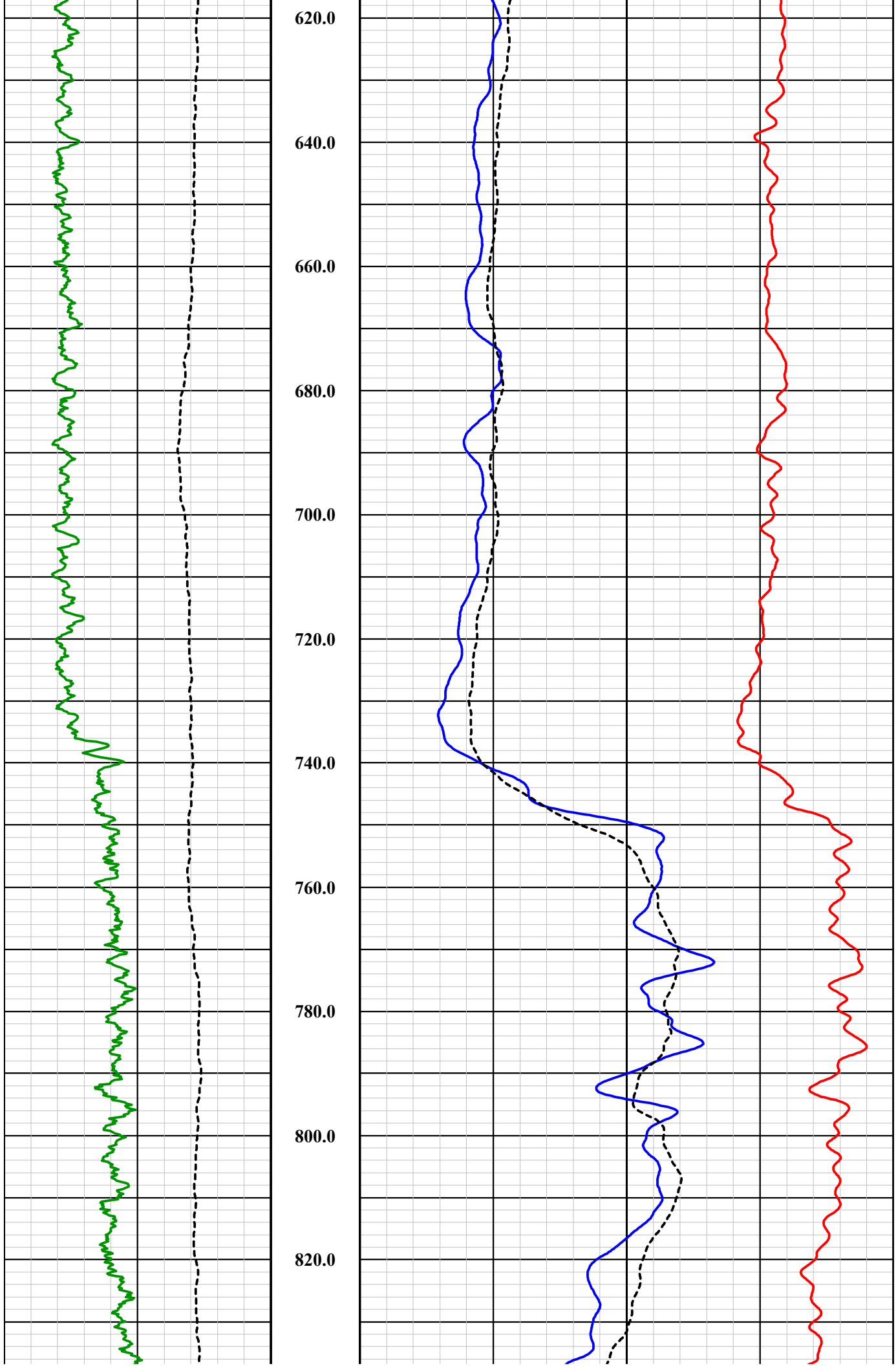
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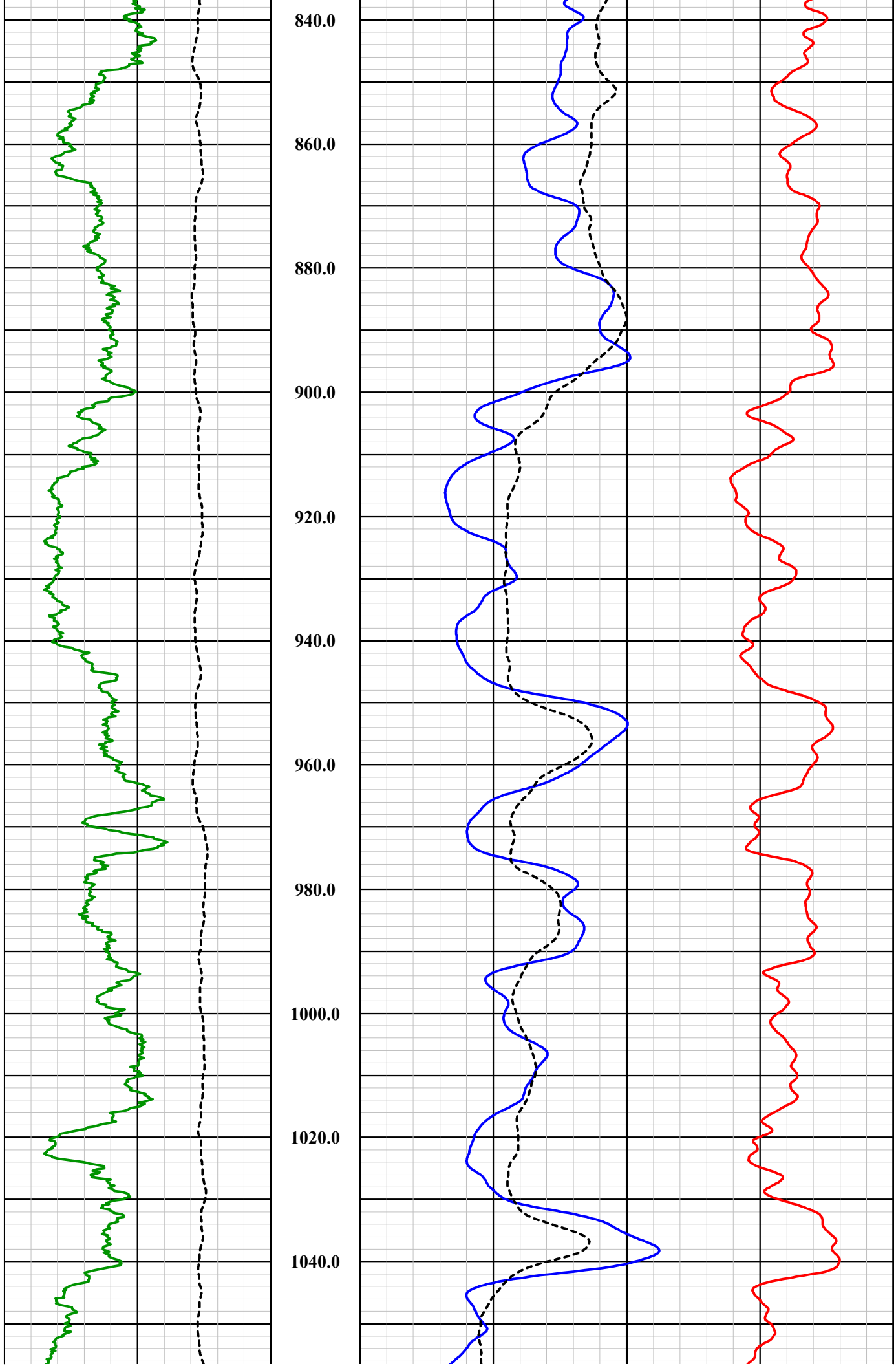
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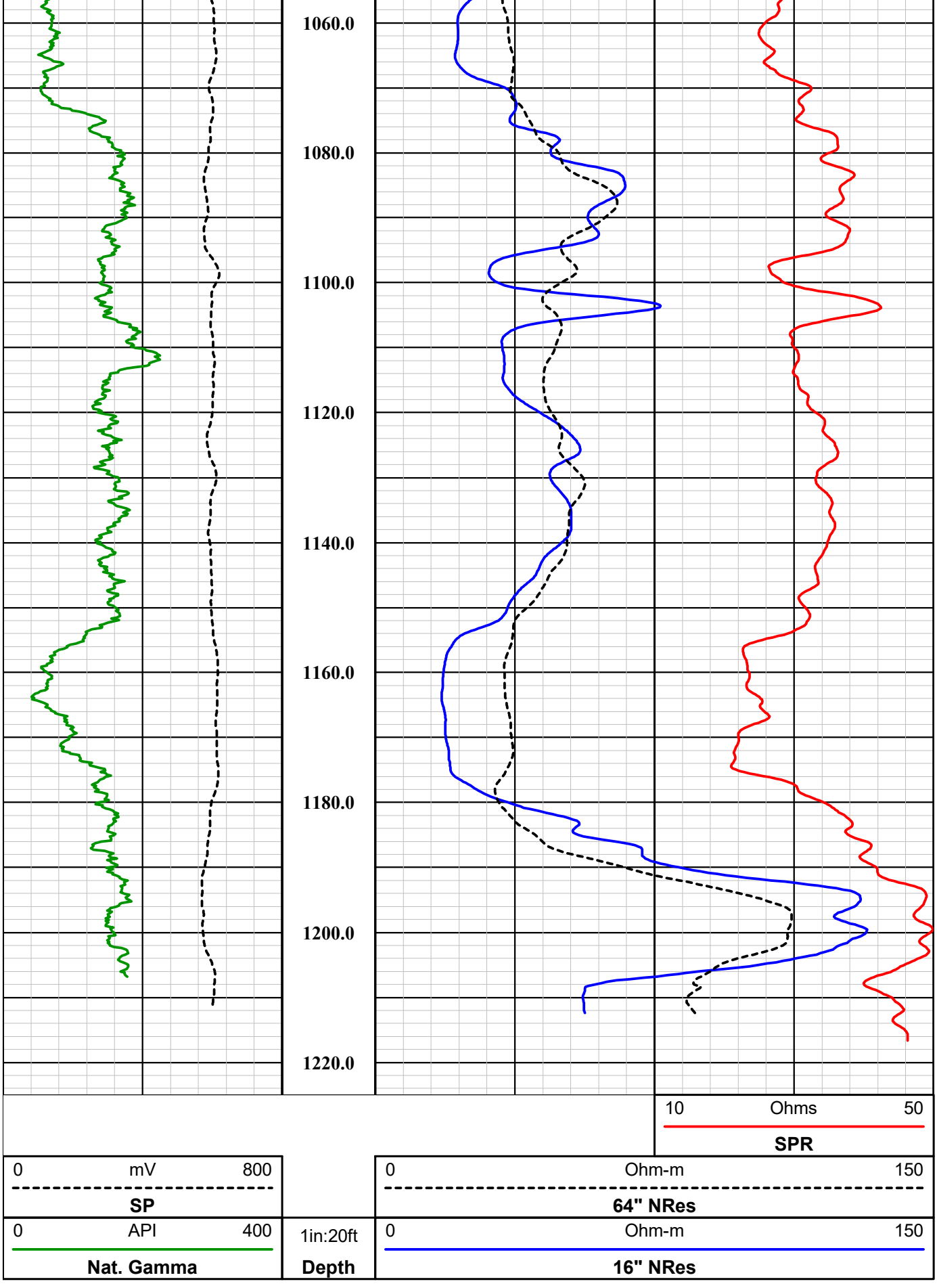
1020.0
1040.0



MSI 40 GRP E-Log Tool

Probe Top = Depth Ref.

Tool SN: 5019, 5513, & 5514

Four Conductor MSI Probe Top

Bridle connects to wireline cablehead: Wireline armor is the B Electrode.

Bridle Electrode (N Electrode)

Probe Length = 1.98 m or 6.5 ft
Bridle Length = 7.88 m or 25.86 ft

Probe Weight = 7.3 kg or 16.0 lbs

Can only be collected in fluid

Isolation Bridle

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

64" Normal Resistivity Electrode/Spontaneous Potential Electrode (M Electrode)

Electrode Measuring Points (from bottom of probe)
- Spontaneous Potential (SP): 1.777 m or 5.81 ft
- 16" Normal Resistivity (16" NRes): 0.3548 m or 1.16 ft
- 64" Normal Resistivity (64" NRes): 0.9644 m or 3.16 ft
- Single Point Resistance (SPR): 0.152 m or 0.50 ft
- Natural Gamma Ray (Nat. Gamma): 0.73 m or 2.39 ft

Natural Gamma Ray

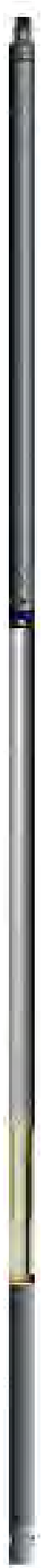
16" Normal Resistivity Electrode (M Electrode)

Current Electrode/Single Point Resistance Electrode (A Electrode)

1.63" or 40 mm Diameter (41.4 mm with neoprene heat shrink and electrical tape)

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	M54-0
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final E-Log Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M54-0
FIELD	FLORENCE COPPER
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: GAMMA - CALIPER
MORE: TEMP. / FLUID RES.
LOCATION

SEC TWP RGE

OTHER SERVICES
E-LOGS
SONIC
DEVIATION

PERMANENT DATUM	ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL	G.L.

DATE	2-6-17	TYPE FLUID IN HOLE	MUD
RUN No	1	MUD WEIGHT	N/A
TYPE LOG	GAMMA - CALIPER - TFR	VISCOSITY	N/A
DEPTH-DRILLER	1210 FT.	LEVEL	FULL
DEPTH-LOGGER	1210 FT.	MAX. REC. TEMP.	30.78 DEG. C
BTM LOGGED INTERVAL	1210 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	A. OLSON / M. QUINONES	TOOL STRING/SN	MSI COMBO TOOL 4183
WITNESSED BY	CHAD - H&A	LOG TIME:ON SITE/OFF SITE	11:00 A.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	10 5/8 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	2-6-17	**Date**	2-6-17	**Date**	2-6-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	MSI 60MM SONIC
Tool SN	4183	**Tool SN**	5514	**Tool SN**	5001
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	1210 FT.	**To**	1210 FT.	**To**	1210 FT.
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	900	**Truck No**	900	**Truck No**	900
Operation Check	2-3-17	**Operation Check**	2-3-17	**Operation Check**	2-3-17
Calibration Check	2-3-17	**Calibration Check**	2-3-17	**Calibration Check**	N/A
Time Logged	12:30 P.M.	**Time Logged**	1:30 P.M.	**Time Logged**	2:10 P.M.

Date	2-6-17	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	2DVA	**Tool Model**		**Tool Model**	
Tool SN	6002	**Tool SN**		**Tool SN**	
From	SURFACE	**From**		**From**	
To	1210 FT.	**To**		**To**	
Recorded By	A. OLSON	**Recorded By**		**Recorded By**	
Truck No	900	**Truck No**		**Truck No**	
Operation Check	2-3-17	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	3:00 P.M.	**Time Logged**		**Time Logged**	

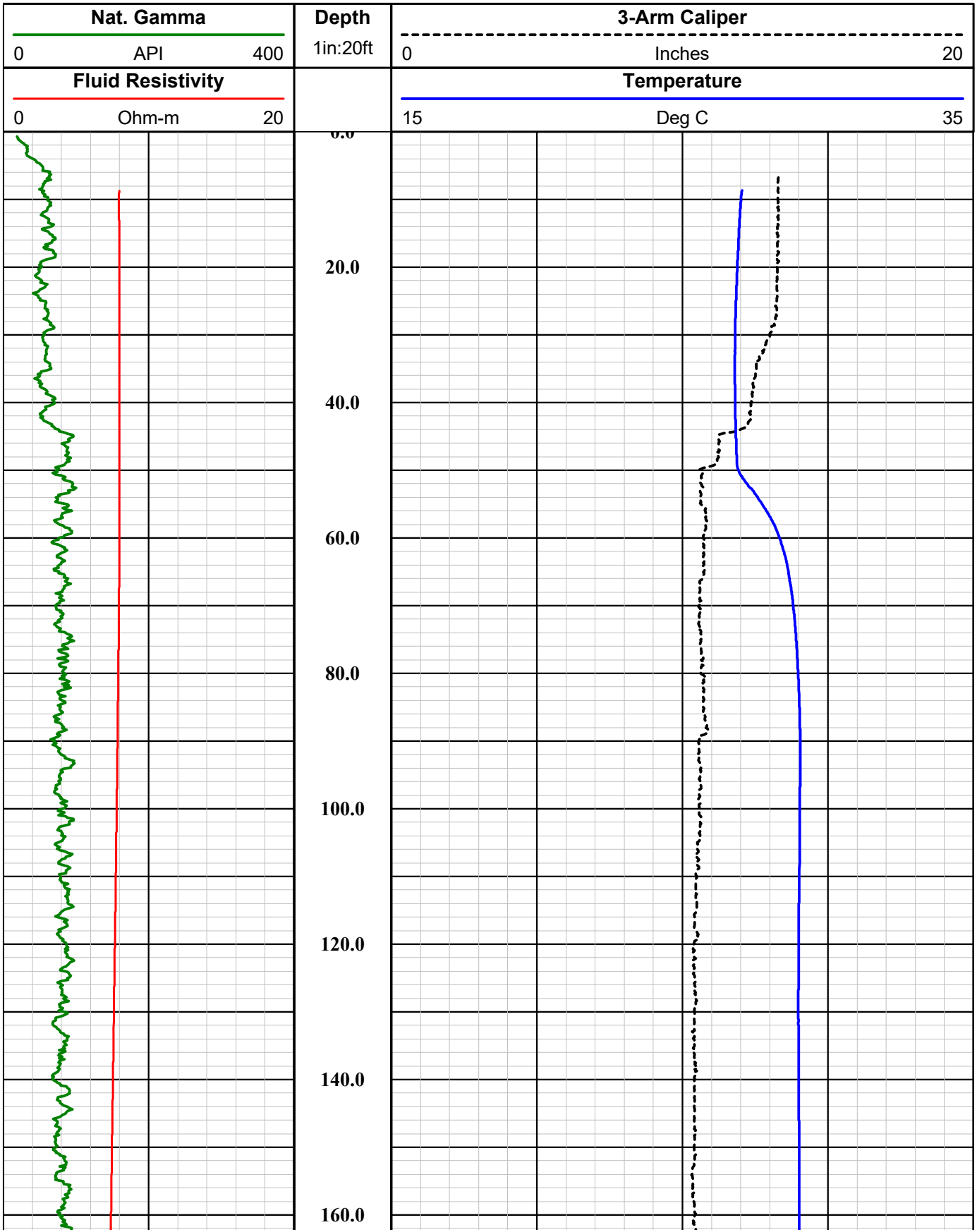
Additional Comments:

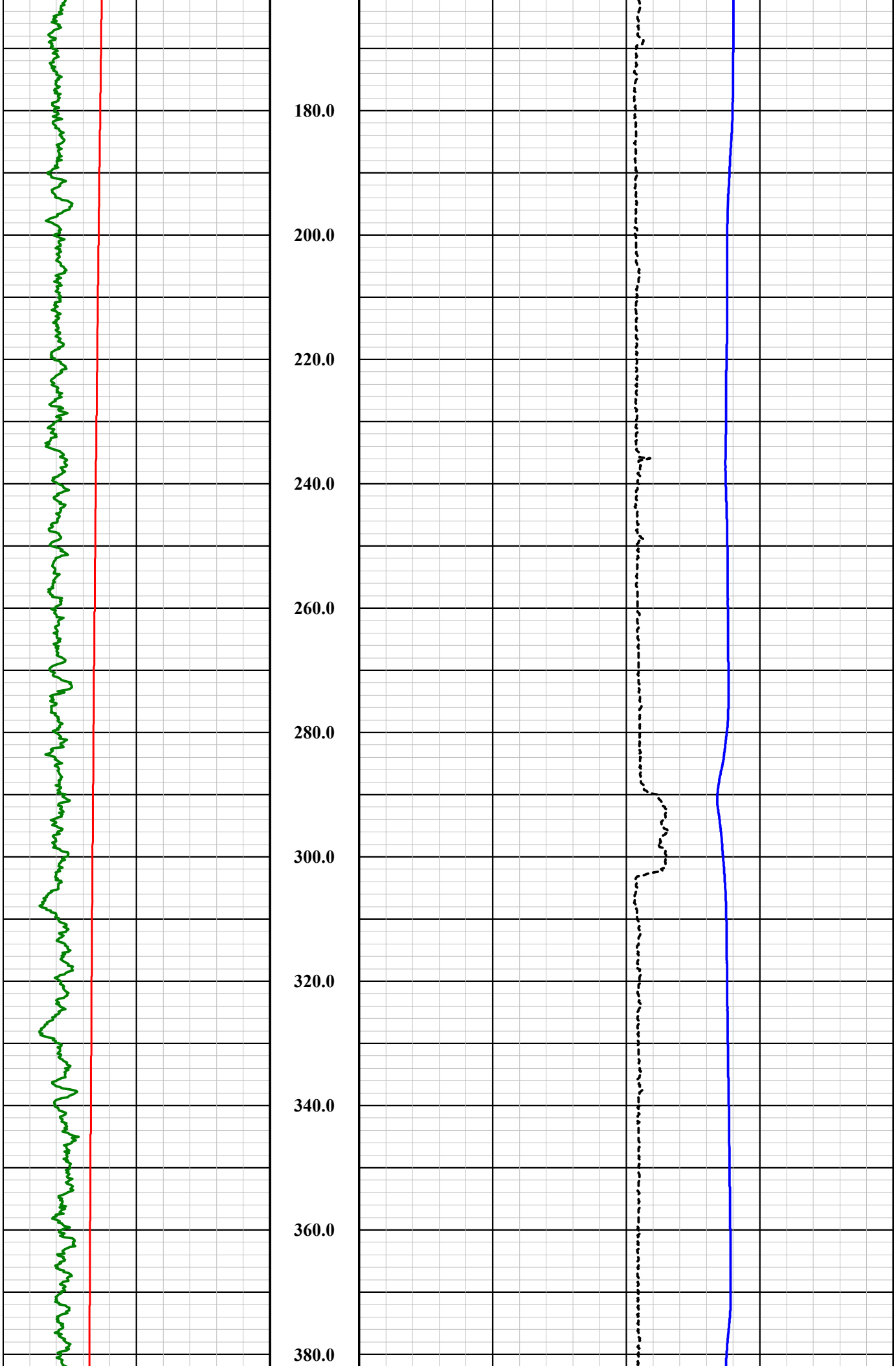
Caliper Arms Used: 15 IN. **Calibration Points:** 6 IN. & 12 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

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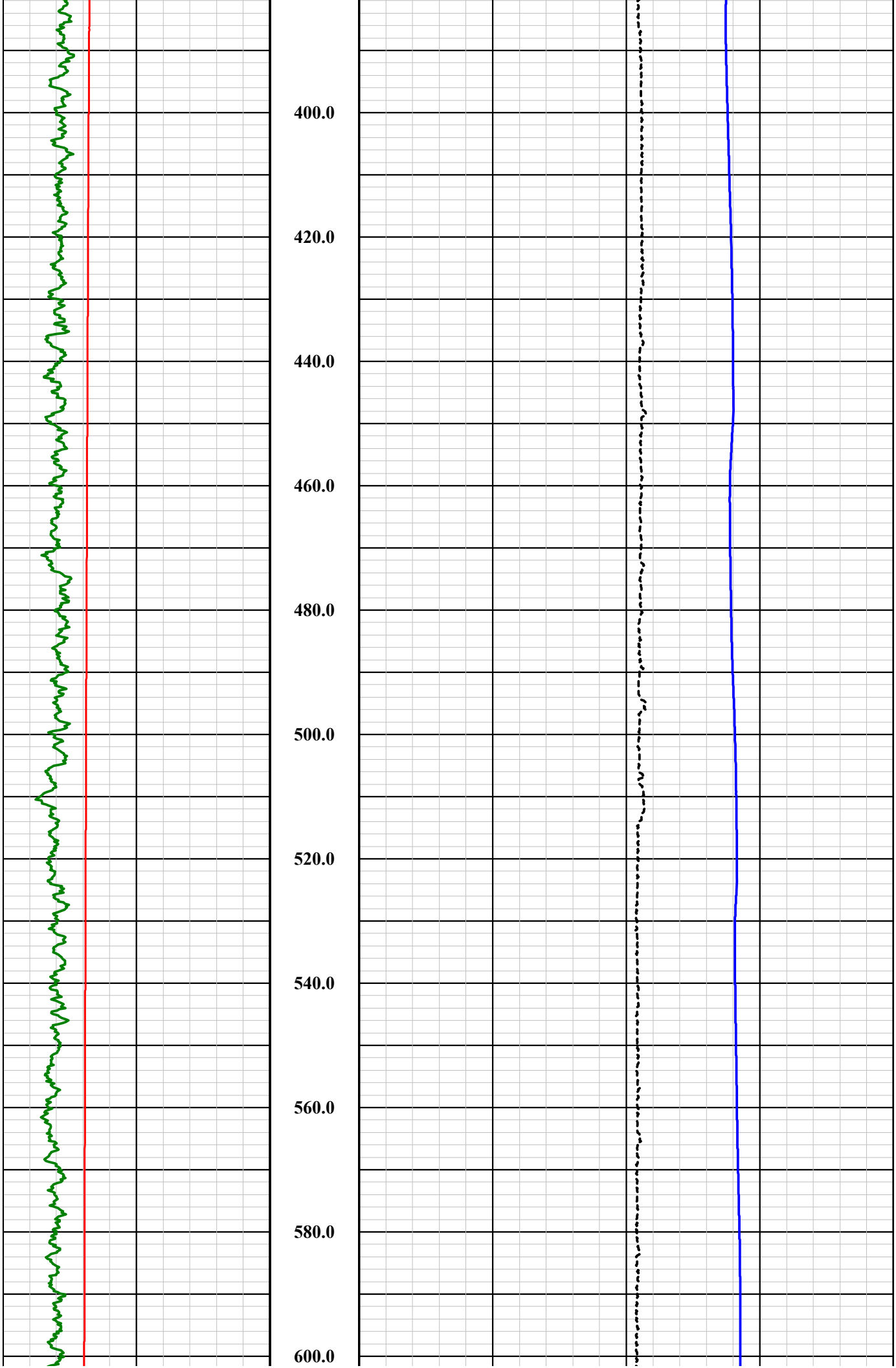
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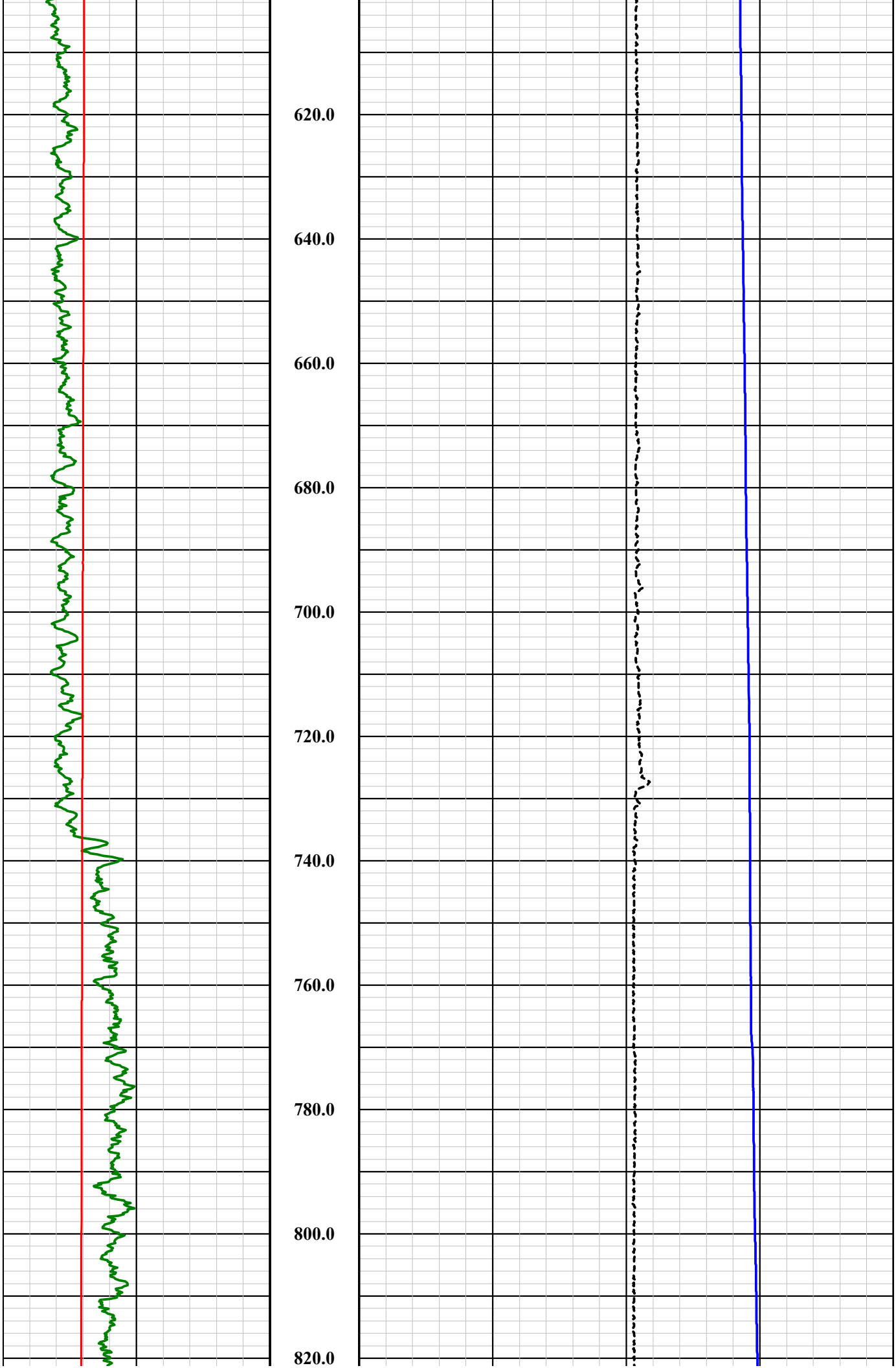
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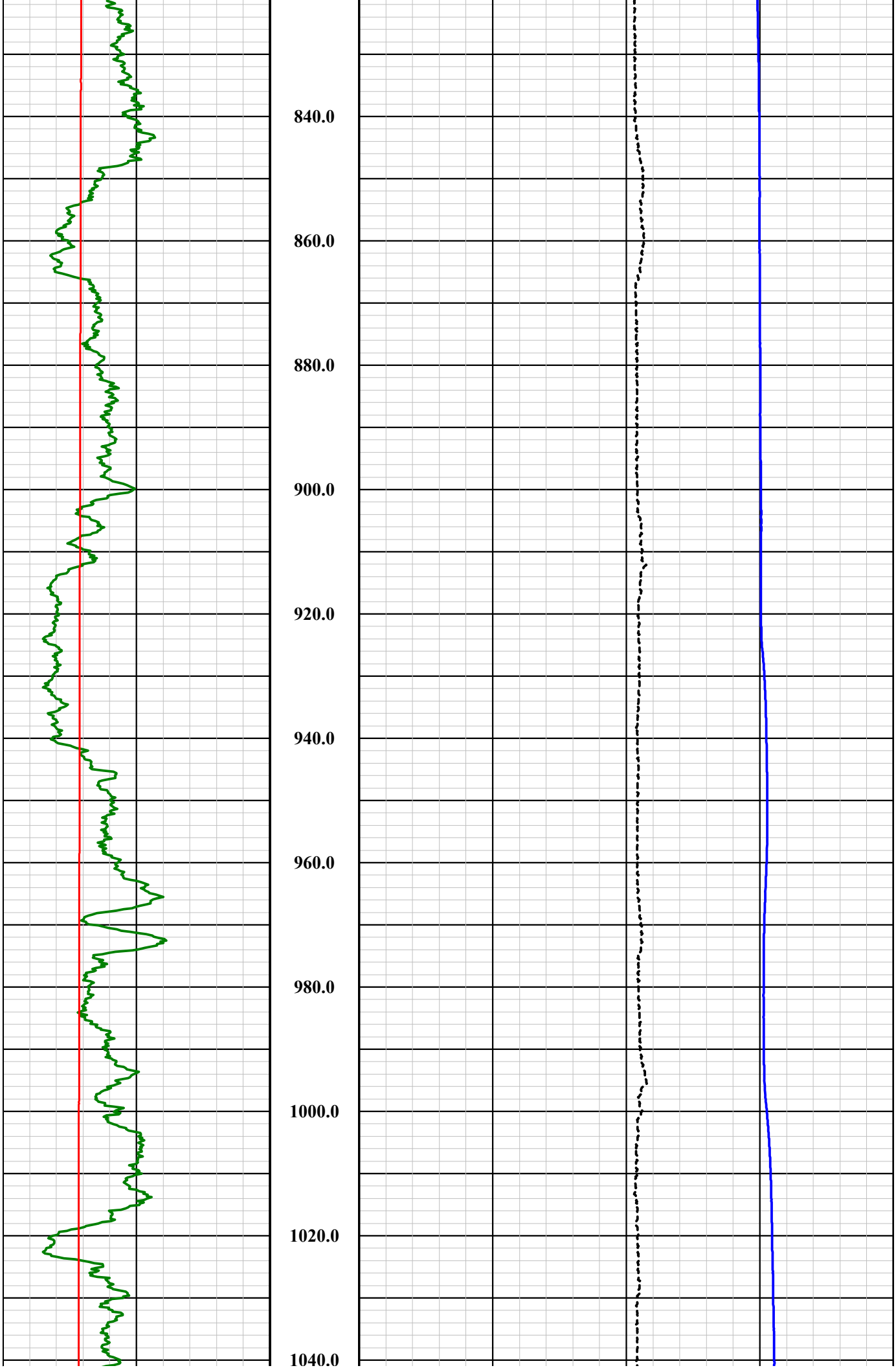
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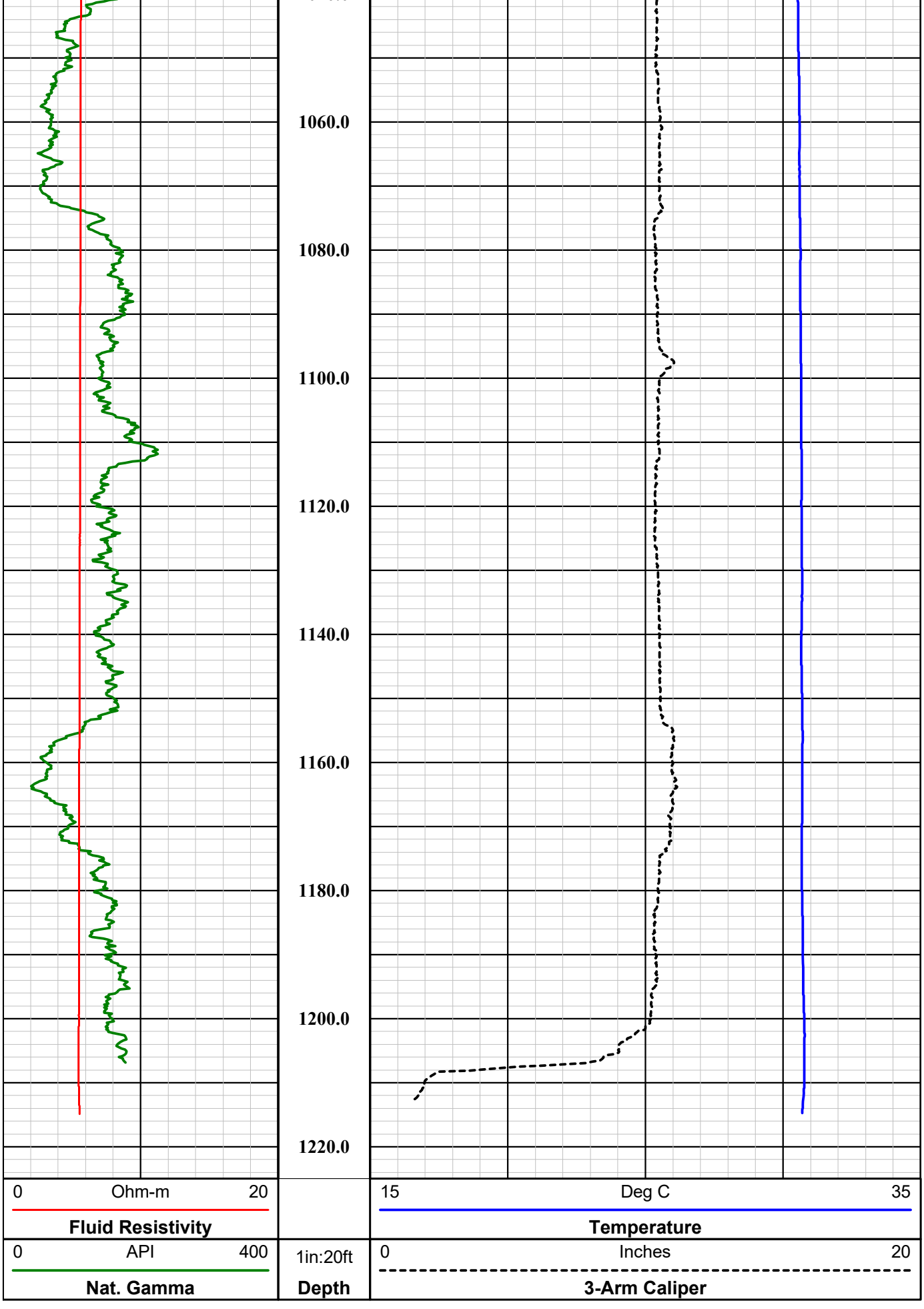
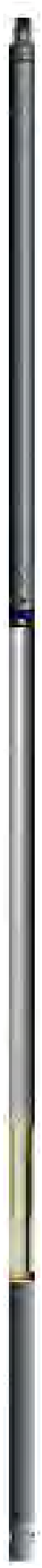


MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	M54-0
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final GCT Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	M54-0
FIELD	FLORENCE COPPER
COUNTY	PINAL
STATE	ARIZONA

TYPE OF LOGS: 2RX SONIC
MORE: GAMMA - CALIPER
LOCATION

SEC TWP RGE

OTHER SERVICES
E-LOGS
TEMPERATURE
FLUID RESISTIVITY
DEVIATION

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	2-6-17	TYPE FLUID IN HOLE	MUD
RUN No	1 & 3	MUD WEIGHT	N/A
TYPE LOG	SONIC - GAMMA - CALIPER	VISCOSITY	N/A
DEPTH-DRILLER	1210 FT.	LEVEL	FULL
DEPTH-LOGGER	1210 FT.	MAX. REC. TEMP.	30.78 DEG. C
BTM LOGGED INTERVAL	1210 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.25 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	A. OLSON / M. QUINONES	TOOL STRING/SN	MSI 60MM SONIC SN 5001
WITNESSED BY	CHAD - H&A	LOG TIME:ON SITE/OFF SITE	11:00 A.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	10 5/8 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	2-6-17	**Date**	2-6-17	**Date**	2-6-17		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	MSI 60MM SONIC		
Tool SN	4183	**Tool SN**	5514	**Tool SN**	5001		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	1210 FT.	**To**	1210 FT.	**To**	1210 FT.		
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON		
Truck No	900	**Truck No**	900	**Truck No**	900		
Operation Check	2-3-17	**Operation Check**	2-3-17	**Operation Check**	2-3-17		
Calibration Check	2-3-17	**Calibration Check**	2-3-17	**Calibration Check**	N/A		
Time Logged	12:30 P.M.	**Time Logged**	1:30 P.M.	**Time Logged**	2:10 P.M.		
Date	2-6-17	**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model	2DVA	**Tool Model**		**Tool Model**			
Tool SN	6002	**Tool SN**		**Tool SN**			
From	SURFACE	**From**		**From**			
To	1210 FT.	**To**		**To**			
Recorded By	A. OLSON	**Recorded By**		**Recorded By**			
Truck No	900	**Truck No**		**Truck No**			
Operation Check	2-3-17	**Operation Check**		**Operation Check**			
Calibration Check	N/A	**Calibration Check**		**Calibration Check**			
Time Logged	3:00 P.M.	**Time Logged**		**Time Logged**			

Additional Comments:

Caliper Arms Used: 15 IN. **Calibration Points:** 6 IN. & 12 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

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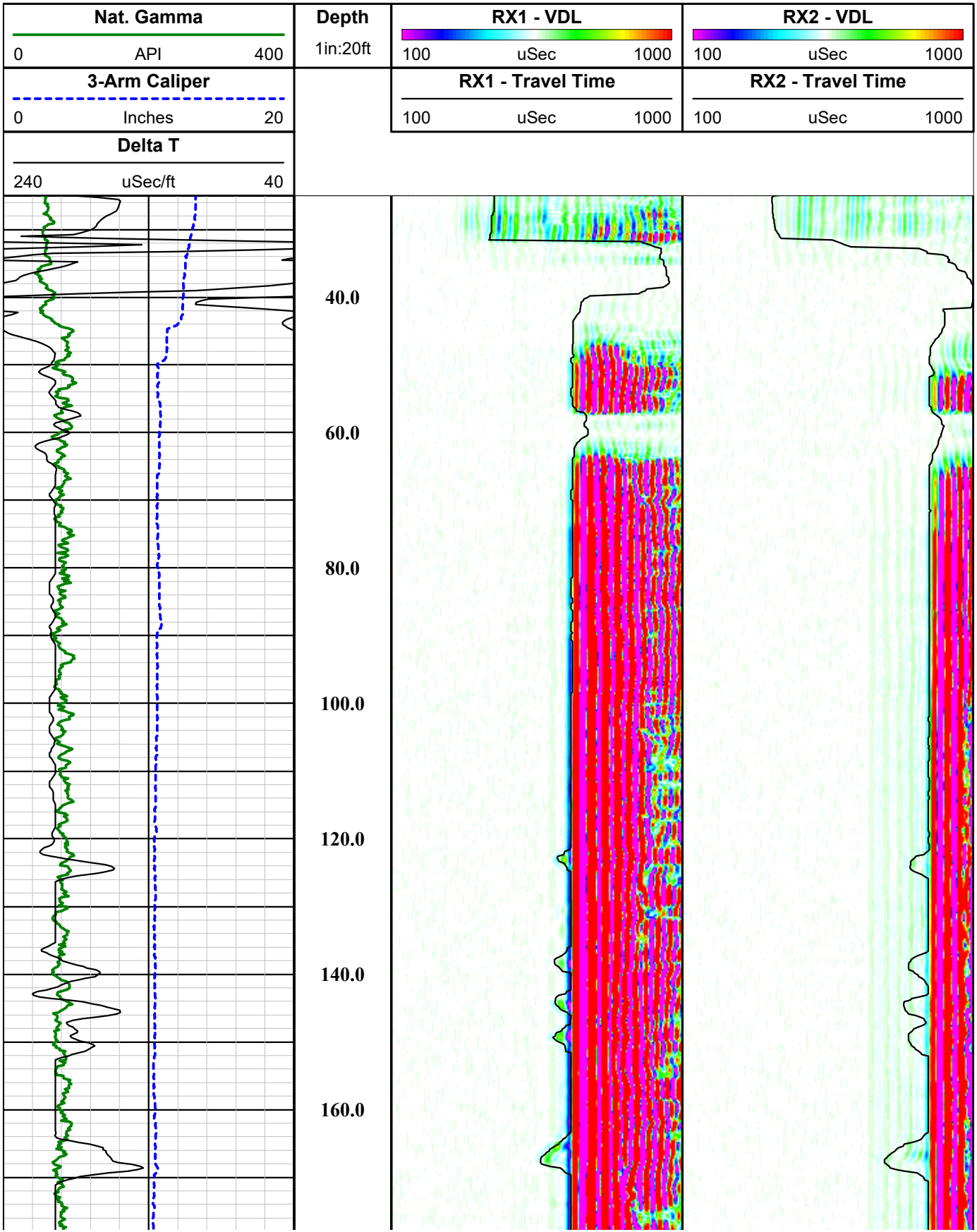

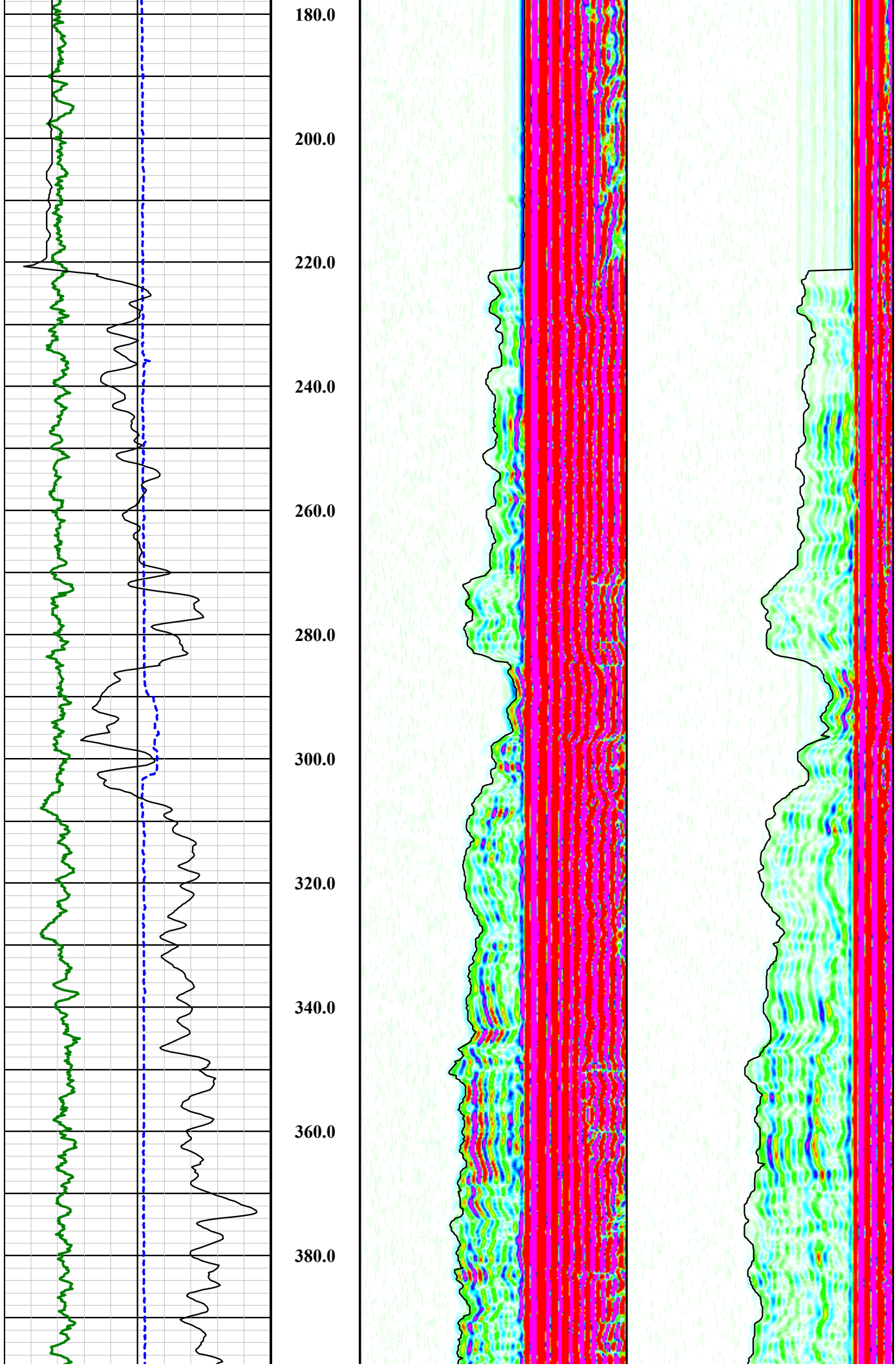
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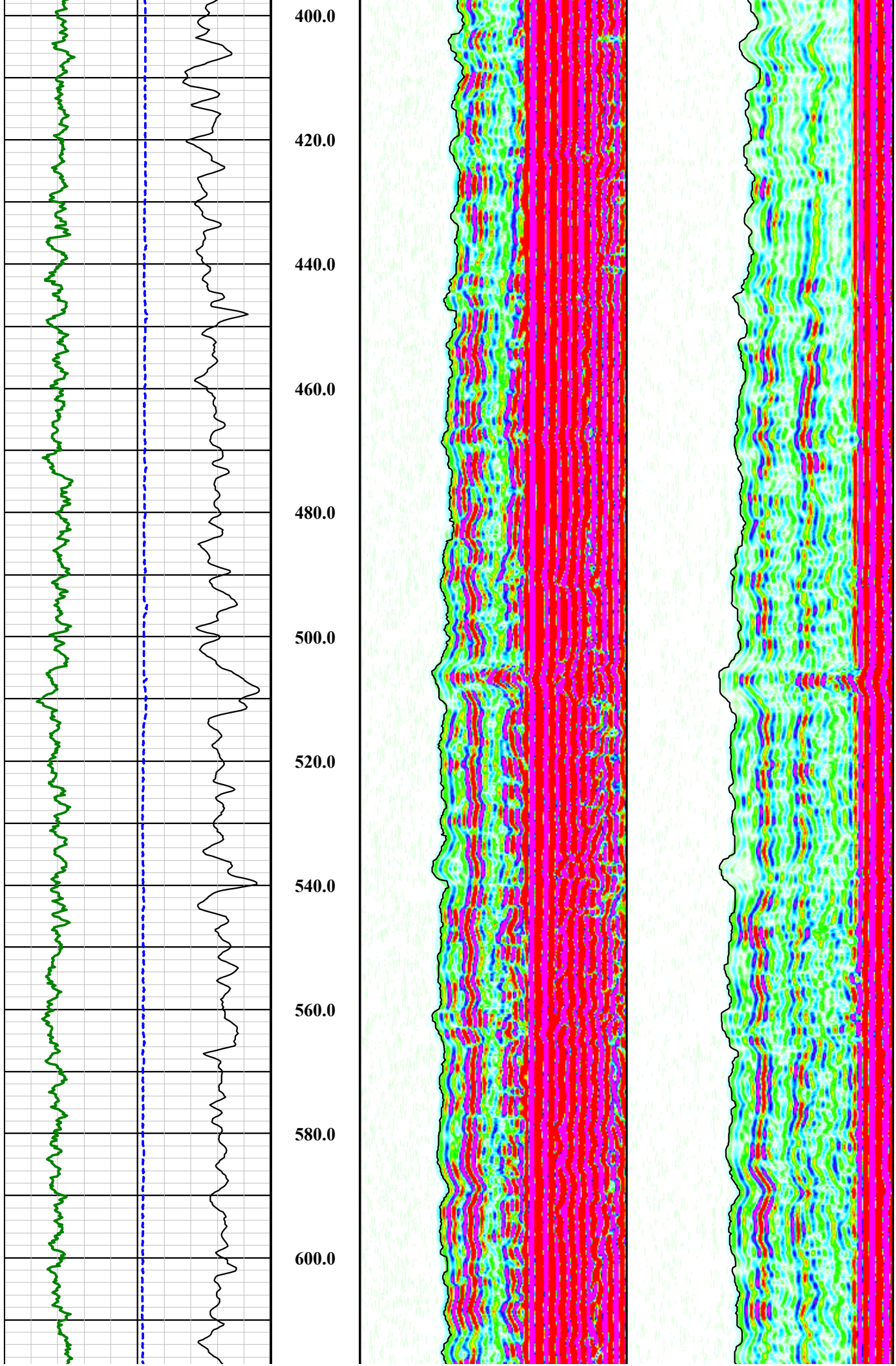
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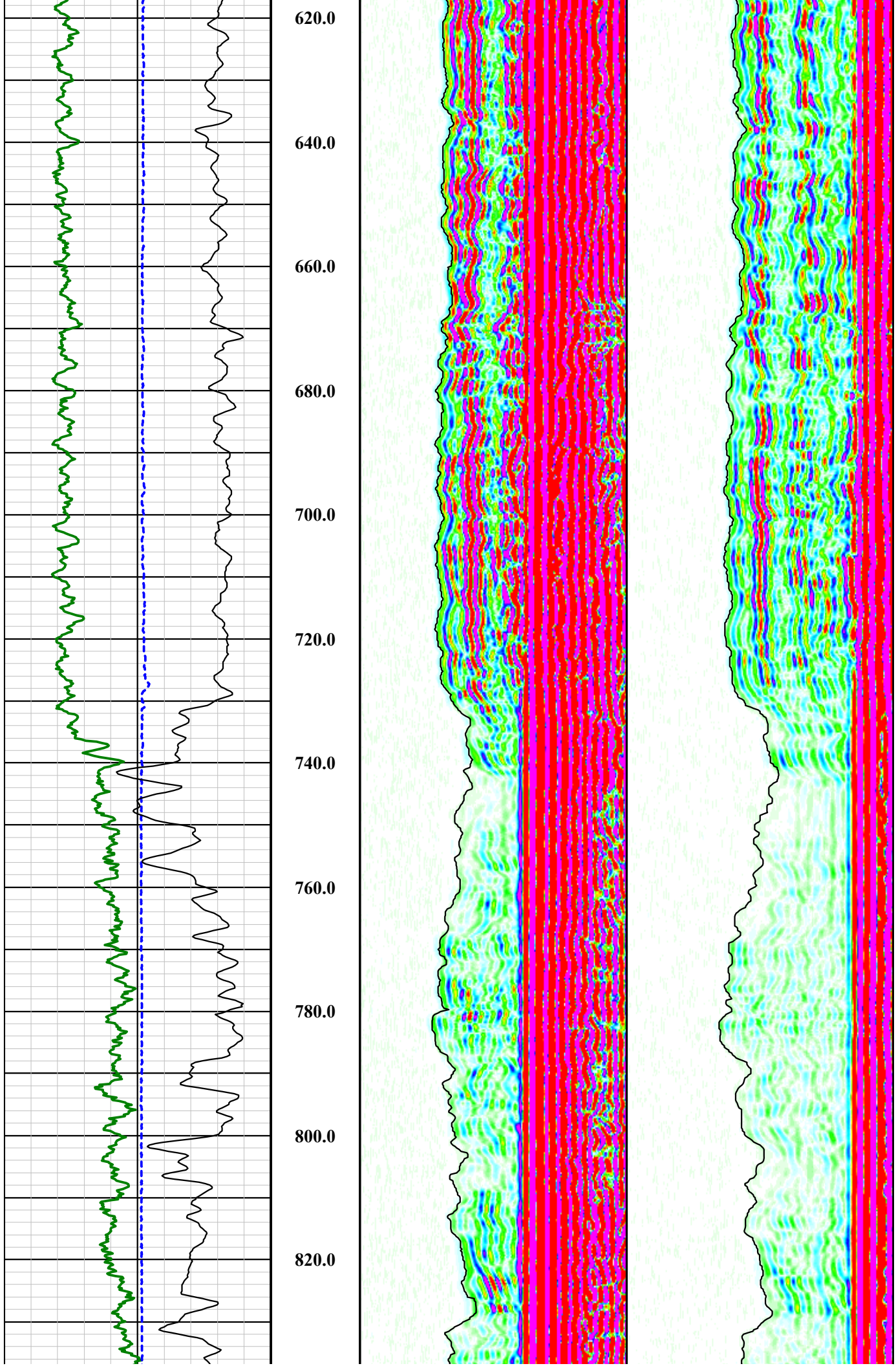
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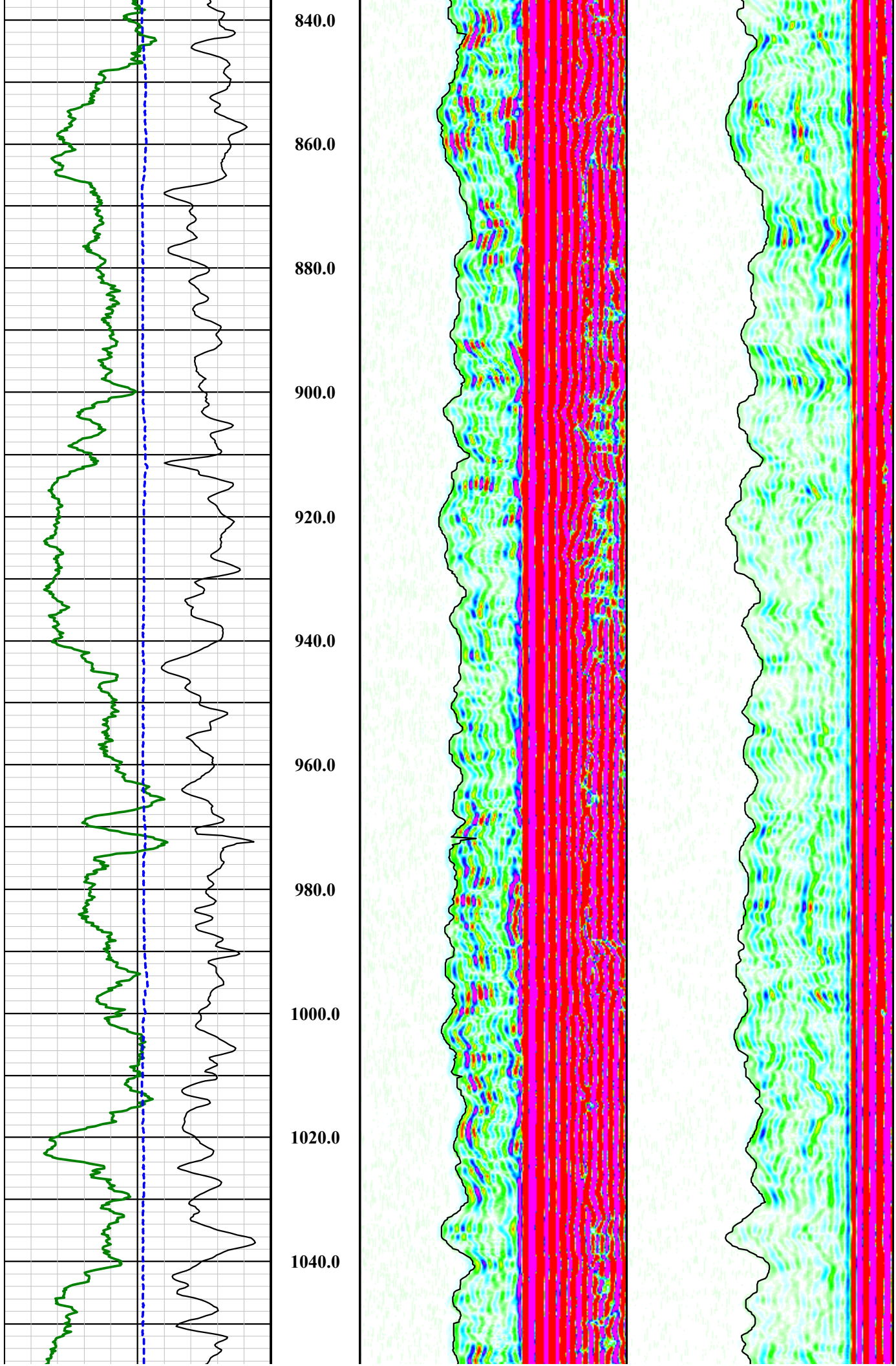
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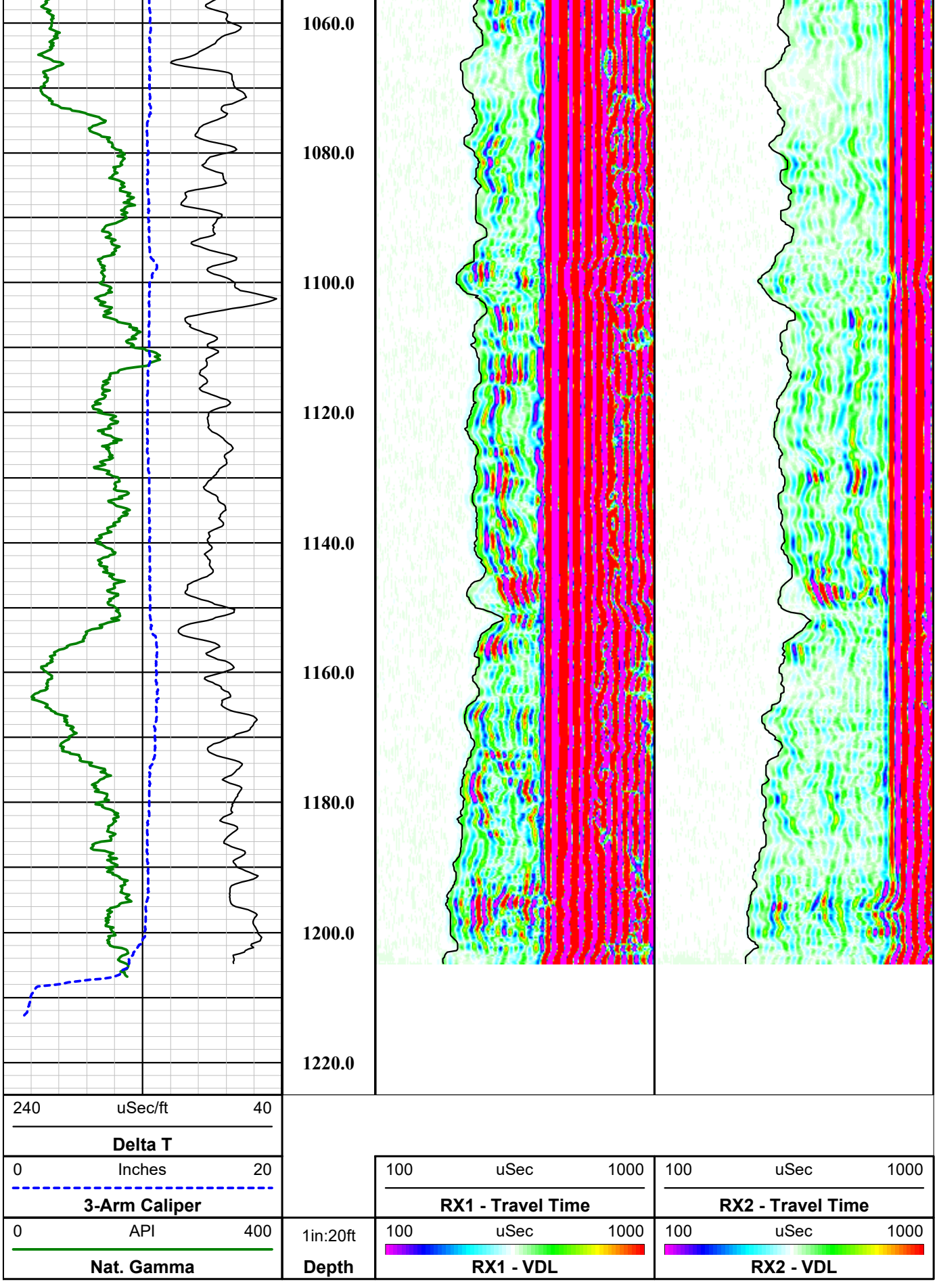


MSI 60 mm 2 RX Full Waveform Sonic Tool

Probe Top = Depth Ref.

Tool SN: 6001 & 6002

Four Conductor MSI Probe Top

Probe Length = 2.8 m or 9.19 ft
Probe Weight = ~26.5 kg or 58.4 lbs

Sensors: Ceramic Piezoelectric

Transmitter Frequency: 24 - 28 kHz resonant frequency

Rx - Rx Spacing: 0.3 m (12.0 in)

Typically centralized with external centralizers

Can only be collected in fluid

Temperature Rating: 80 Deg C (176 Deg F)
Presure Rating: 200 bar (2900 psi)

Rx-2 Tx - Rx2 Spacing = 1.22 m (48.0 in)

Rx-1 Tx - Rx1 Spacing = .91 m (36.0 in)

Acoustic Isolater

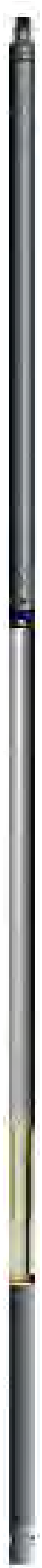
Tx = Acoustic Transmitter

0.660 m or 26.0 in. - End of tool to center of Tx

2.36 in or 60 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



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1.375" or 34.9 mm Diameter

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	M54-0
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final Sonic Summary

Drift Report

Wellbore DRIFT Interpretation

PREPARED ESPECIALLY FOR

FLORENCE COPPER

M54-0

Monday - February 6, 2017

Southwest Exploration Services, LLC
(480) 926-4558

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

(480) 926-4558

Company: FLORENCE COPPER **Well Owner:**

County: PINAL **State:** Arizona **Country:** USA

Well Number: M54-0 **Survey Date:** Monday - February 6, 2017 **Magnetic Declination:** Declination Correction Not Used

Field: FLORENCE COPPER **Drift Calculation Methodology:** Balanced Tangential Method

Location:

Remarks:

Witness: CHAD - H&A **Vehicle No.:** 900 **Invoice No.:** **Operator:** A. OLSON **Well Depth:** 1200 Feet **Casing size:** 10.625 Inches

Tool: Compass - 6002 **Lat.:** **Long.:** **Sec.:** **Twp.:** **Rge.:**

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BGR., degrees
20	0.73	358.57	20.00						
40	0.95	238.47	39.99	0.041	-0.145	0.42	5.28	0.15' (1.80")	285.70
60	0.37	333.88	59.98	0.012	-0.315	0.96	4.51	0.31' (3.72")	272.20
80	0.32	332.68	79.97	0.120	-0.369	0.84	0.06	0.39' (4.68")	288.00
100	0.20	305.75	99.97	0.190	-0.423	0.42	1.42	0.46' (5.52")	294.20
120	0.23	003.80	119.96	0.250	-0.449	0.14	2.96	0.51' (6.12")	299.20
140	0.21	283.54	139.95	0.299	-0.482	0.43	3.93	0.57' (6.84")	301.80
160	0.45	238.88	159.94	0.267	-0.585	0.83	2.32	0.64' (7.68")	294.50
180	0.44	245.79	179.93	0.195	-0.722	0.95	0.37	0.75' (9.00")	285.10
200	0.63	239.96	199.92	0.108	-0.887	0.38	0.31	0.89' (10.68")	277.00
220	0.65	267.76	219.91	0.049	-1.096	1.00	1.47	1.10' (13.20")	272.50
240	0.82	258.34	239.90	0.016	-1.350	1.00	0.50	1.35' (16.20")	270.70
260	0.85	266.33	259.89	-0.022	-1.638	0.35	0.42	1.64' (19.68")	269.20
280	0.85	281.14	279.88	-0.003	-1.932	0.93	0.79	1.93' (23.16")	269.90
300	0.82	288.56	299.87	0.071	-2.213	0.79	0.39	2.21' (26.52")	271.80
320	0.95	287.24	319.86	0.166	-2.507	0.51	0.07	2.51' (30.12")	273.80
340	0.92	283.66	339.85	0.253	-2.821	0.01	0.19	2.83' (33.96")	275.10
360	0.81	295.47	359.84	0.352	-3.105	0.54	0.63	3.12' (37.44")	276.50

True Vertical Depth: 1199.43' **Final Drift Distance:** 14.98' (179.76") **Final Drift Bearing:** 258.70°

Note: Magnetic Declination is not used because it is not a factor in the calculation of well drift or alignment. Magnetic Declination is only important if attempting to hit a target or miss another well and then it is included in the calculations.

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

M54-0

(480) 926-4558

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BRG., degrees
380	0.92°	300.93°	379.83	0.495	-3.370	0.74	0.29	3.41' (40.92")	278.40
400	0.82°	304.51°	399.82	0.659	-3.626	0.89	0.19	3.68' (44.16")	280.30
420	0.82°	300.53°	419.81	0.813	-3.867	0.22	0.21	3.95' (47.40")	281.90
440	0.95°	294.55°	439.80	0.955	-4.141	0.97	0.32	4.25' (51.00")	283.00
460	0.98°	288.88°	459.79	1.079	-4.454	0.97	0.30	4.58' (54.96")	283.60
480	0.94°	288.58°	479.78	1.187	-4.771	0.15	0.02	4.92' (59.04")	284.00
500	0.81°	289.95°	499.77	1.288	-5.059	0.83	0.07	5.22' (62.64")	284.30
520	0.79°	290.93°	519.76	1.385	-5.321	0.62	0.05	5.50' (66.00")	284.60
540	0.61°	291.38°	539.75	1.473	-5.549	0.71	0.03	5.74' (68.88")	284.90
560	0.81°	265.95°	559.74	1.502	-5.789	0.25	1.34	5.98' (71.76")	284.50
580	0.66°	261.38°	579.73	1.475	-6.044	0.76	0.24	6.22' (74.64")	283.70
600	0.69°	249.13°	599.72	1.415	-6.270	0.51	0.65	6.43' (77.16")	282.70
620	0.74°	246.86°	619.71	1.321	-6.501	0.71	0.12	6.63' (79.56")	281.50
640	0.82°	259.89°	639.70	1.245	-6.761	0.10	0.69	6.87' (82.44")	280.40
660	0.74°	243.35°	659.69	1.162	-7.017	0.84	0.88	7.11' (85.32")	279.40
680	0.97°	239.54°	679.68	1.018	-7.278	0.82	0.20	7.35' (88.20")	278.00
700	0.91°	237.24°	699.67	0.846	-7.557	0.21	0.12	7.60' (91.20")	276.40
720	0.92°	235.45°	719.66	0.669	-7.823	0.57	0.10	7.85' (94.20")	274.90
740	1.18°	249.55°	739.65	0.506	-8.148	0.27	0.75	8.16' (97.92")	273.60
760	1.15°	242.35°	759.64	0.341	-8.519	0.93	0.38	8.53' (102.36")	272.30
780	1.46°	240.69°	779.63	0.123	-8.919	0.62	0.09	8.92' (107.04")	270.80
800	1.30°	241.98°	799.62	-0.108	-9.341	0.96	0.07	9.34' (112.08")	269.30
820	1.26°	241.31°	819.61	-0.320	-9.734	0.10	0.04	9.74' (116.88")	268.10
840	1.44°	243.14°	839.60	-0.539	-10.151	0.33	0.10	10.17' (122.04")	267.00
860	1.21°	230.23°	859.59	-0.788	-10.537	0.54	0.69	10.57' (126.84")	265.70
880	1.03°	232.77°	879.58	-1.032	-10.842	0.50	0.14	10.89' (130.68")	264.60
900	1.03°	232.79°	899.57	-1.249	-11.128	0.46	0.00	11.20' (134.40")	263.60
920	0.94°	235.09°	919.56	-1.452	-11.406	0.66	0.12	11.50' (138.00")	262.70
940	1.09°	255.75°	939.55	-1.593	-11.725	0.09	1.09	11.83' (141.96")	262.30
960	0.95°	237.93°	959.54	-1.728	-12.050	0.25	0.94	12.17' (146.04")	261.80
980	0.87°	247.42°	979.53	-1.874	-12.331	0.99	0.50	12.47' (149.64")	261.40
1,000	0.61°	242.27°	999.53	-1.982	-12.565	0.93	0.27	12.72' (152.64")	261.00
1,020	0.63°	235.06°	1,019.52	-2.095	-12.749	0.97	0.38	12.92' (155.04")	260.70

True Vertical Depth: 1199.43' **Final Drift Distance: 14.98' (179.76")** **Final Drift Bearing: 258.70°**

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC
(480) 926-4558

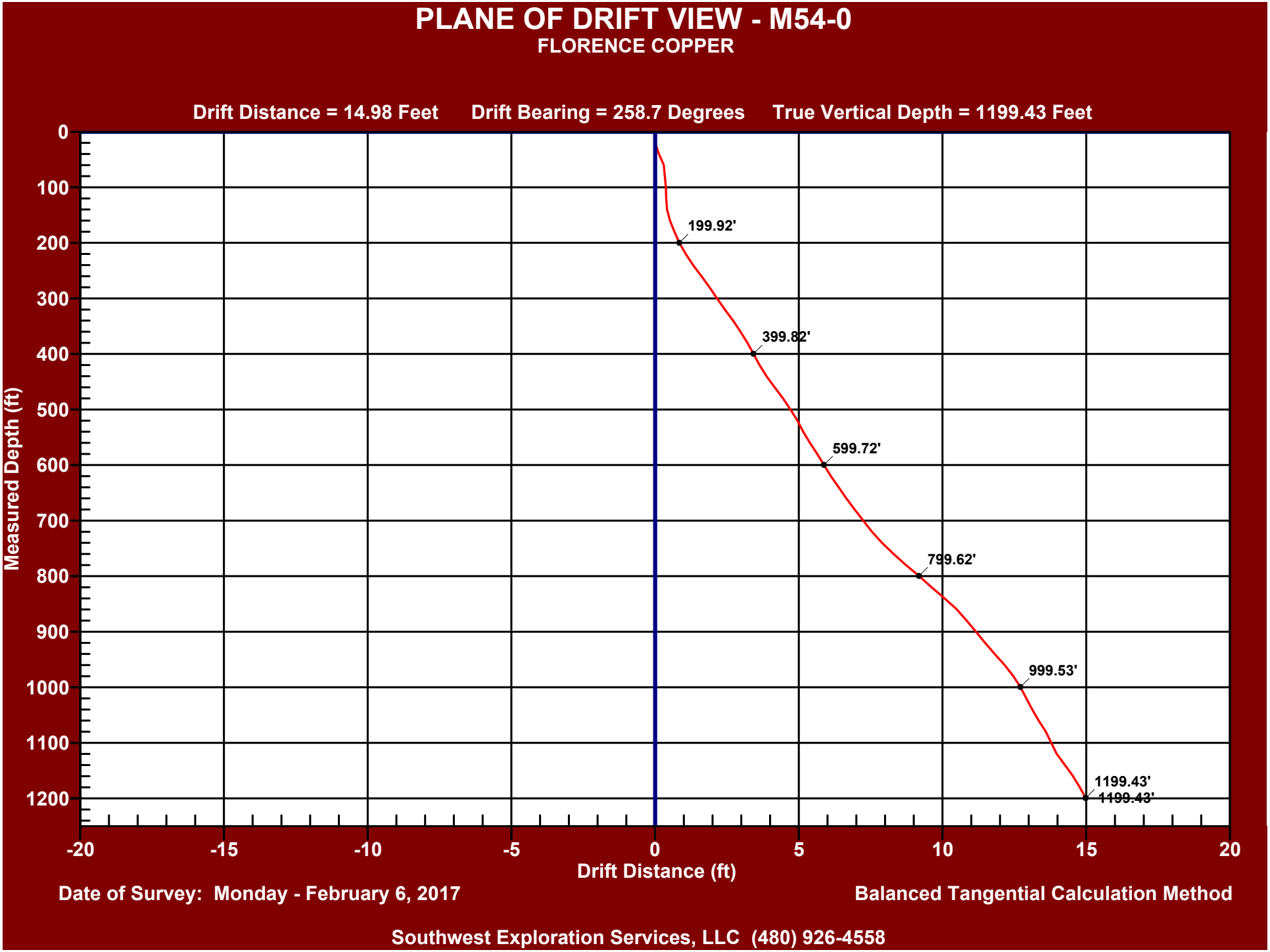
M54-0

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BRG., degrees
1,040	0.61°	237.38°	1,039.51	-2.215	-12.929	0.42	0.12	13.12' (157.44")	260.30
1,060	0.74°	242.95°	1,059.50	-2.331	-13.134	0.20	0.30	13.34' (160.08")	259.90
1,080	0.71°	258.25°	1,079.49	-2.415	-13.370	0.90	0.81	13.59' (163.08")	259.80
1,100	0.43°	238.52°	1,099.48	-2.479	-13.555	0.04	1.05	13.78' (165.36")	259.60
1,120	0.71°	249.49°	1,119.47	-2.562	-13.735	0.10	0.58	13.97' (167.64")	259.40
1,140	0.90°	244.45°	1,139.46	-2.673	-13.993	0.97	0.27	14.25' (171.00")	259.20
1,160	0.79°	243.81°	1,159.45	-2.802	-14.258	0.49	0.03	14.53' (174.36")	258.90
1,180	0.60°	266.69°	1,179.44	-2.869	-14.486	0.76	1.21	14.77' (177.24")	258.80
1,200	0.62°	243.85°	1,199.43	-2.923	-14.688	0.70	1.21	14.98' (179.76")	258.70

True Vertical Depth: 1199.43'

Final Drift Distance: 14.98' (179.76")

Final Drift Bearing: 258.70°

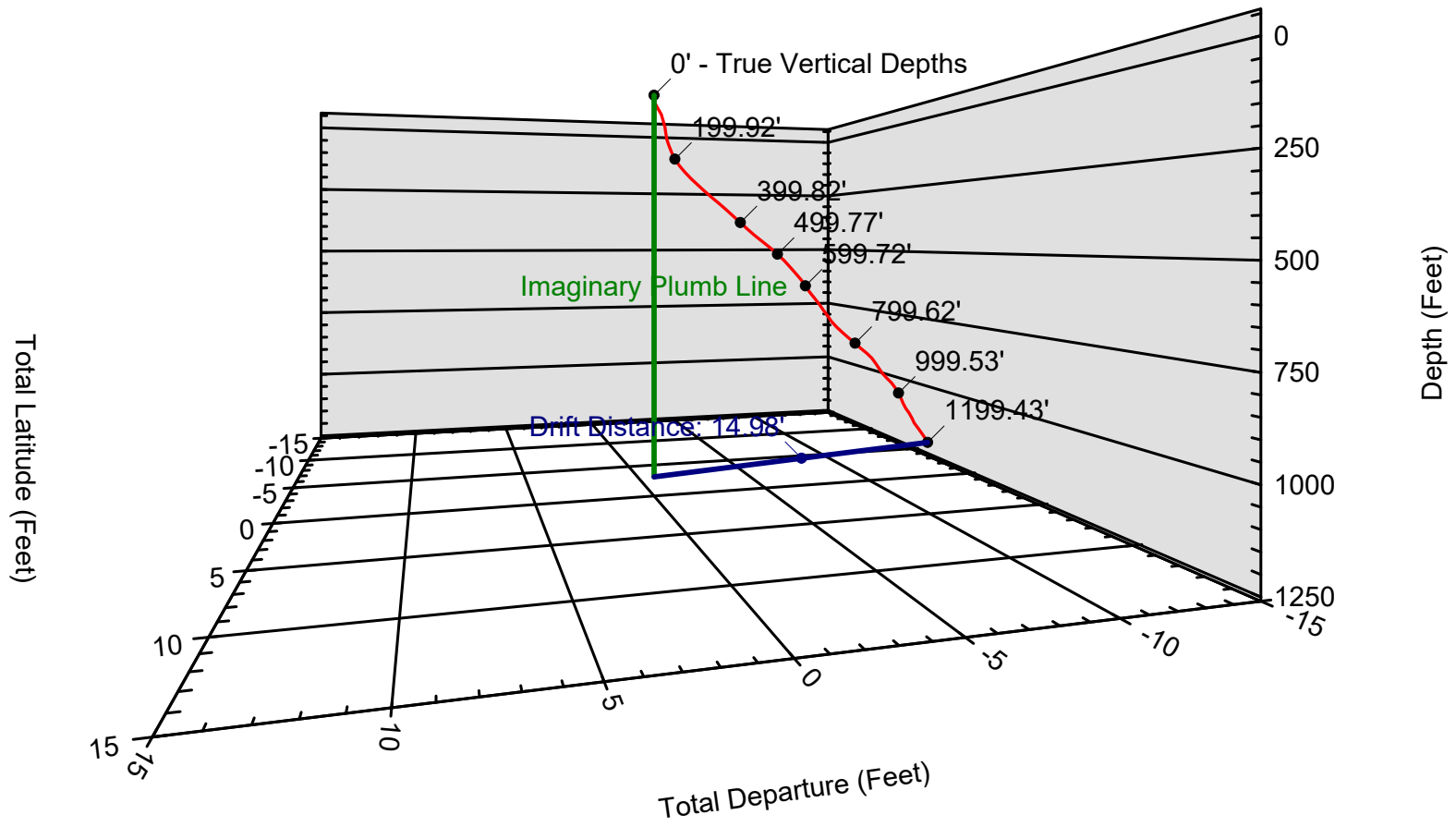

PLANE OF DRIFT VIEW - M54-0
FLORENCE COPPER
Drift Distance = 14.98 Feet
Drift Bearing = 258.7 Degrees
True Vertical Depth = 1199.43 Feet
Measured Depth (ft)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
199.92'
399.82'
599.72'
799.62'
999.53'
1199.43'
1199.43'
-20
-15
-10
-5
0
5
10
15
20
Drift Distance (ft)
Date of Survey: Monday - February 6, 2017
Balanced Tangential Calculation Method
Southwest Exploration Services, LLC (480) 926-4558

3D PROJECTION VIEW - M54-0

FLORENCE COPPER

Drift Distance = 14.98 Feet Drift Bearing = 258.7 Degrees True Vertical Depth = 1199.43 Feet

346.0



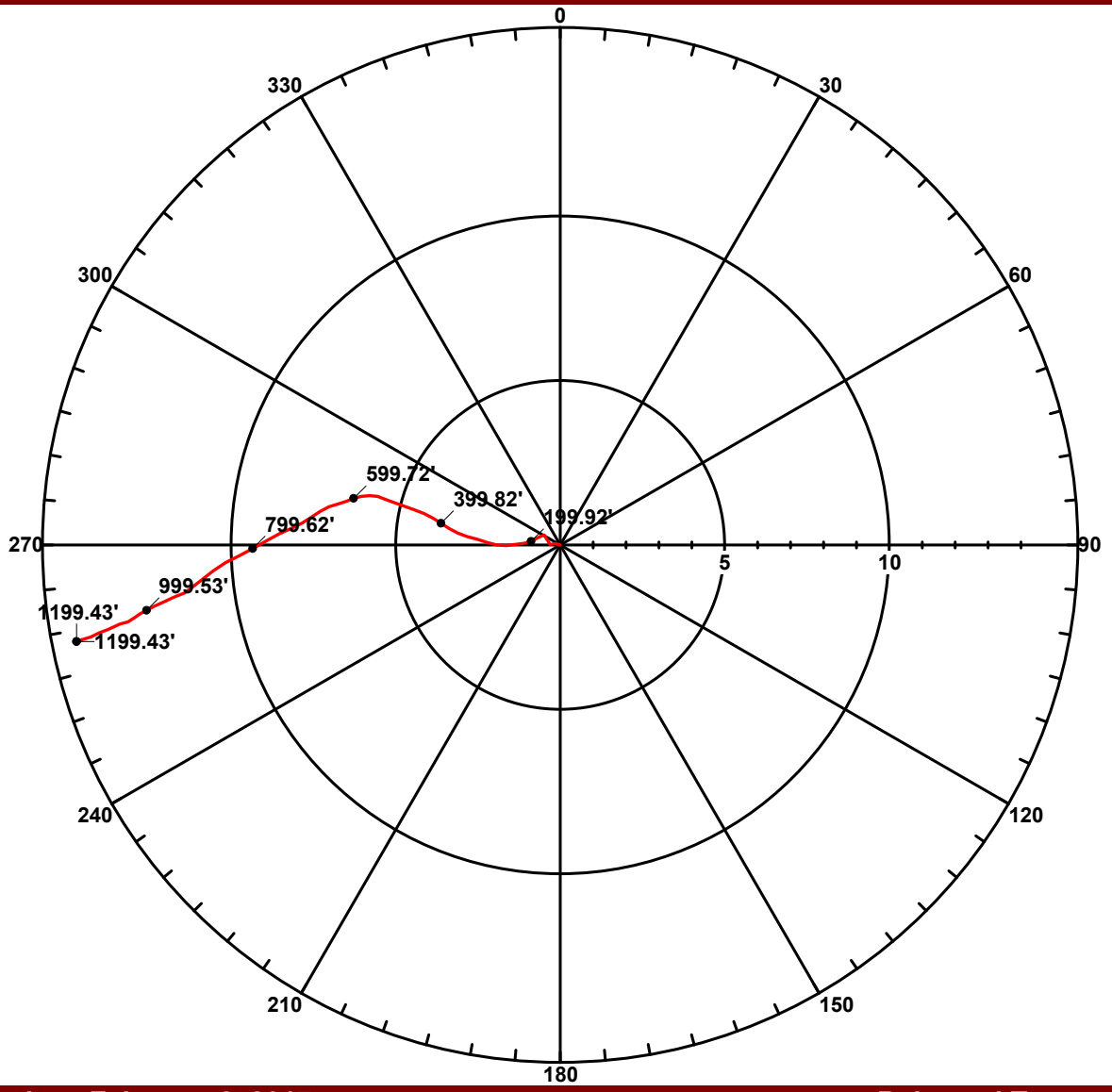
Date of Survey: Monday - February 6, 2017 **Balanced Tangential Calculation Method**

Southwest Exploration Services, LLC (480) 926-4558

POLAR VIEW - M54-0

FLORENCE COPPER

Drift Distance = 14.98 Feet Drift Bearing = 258.7 Degrees True Vertical Depth = 1199.43 Feet



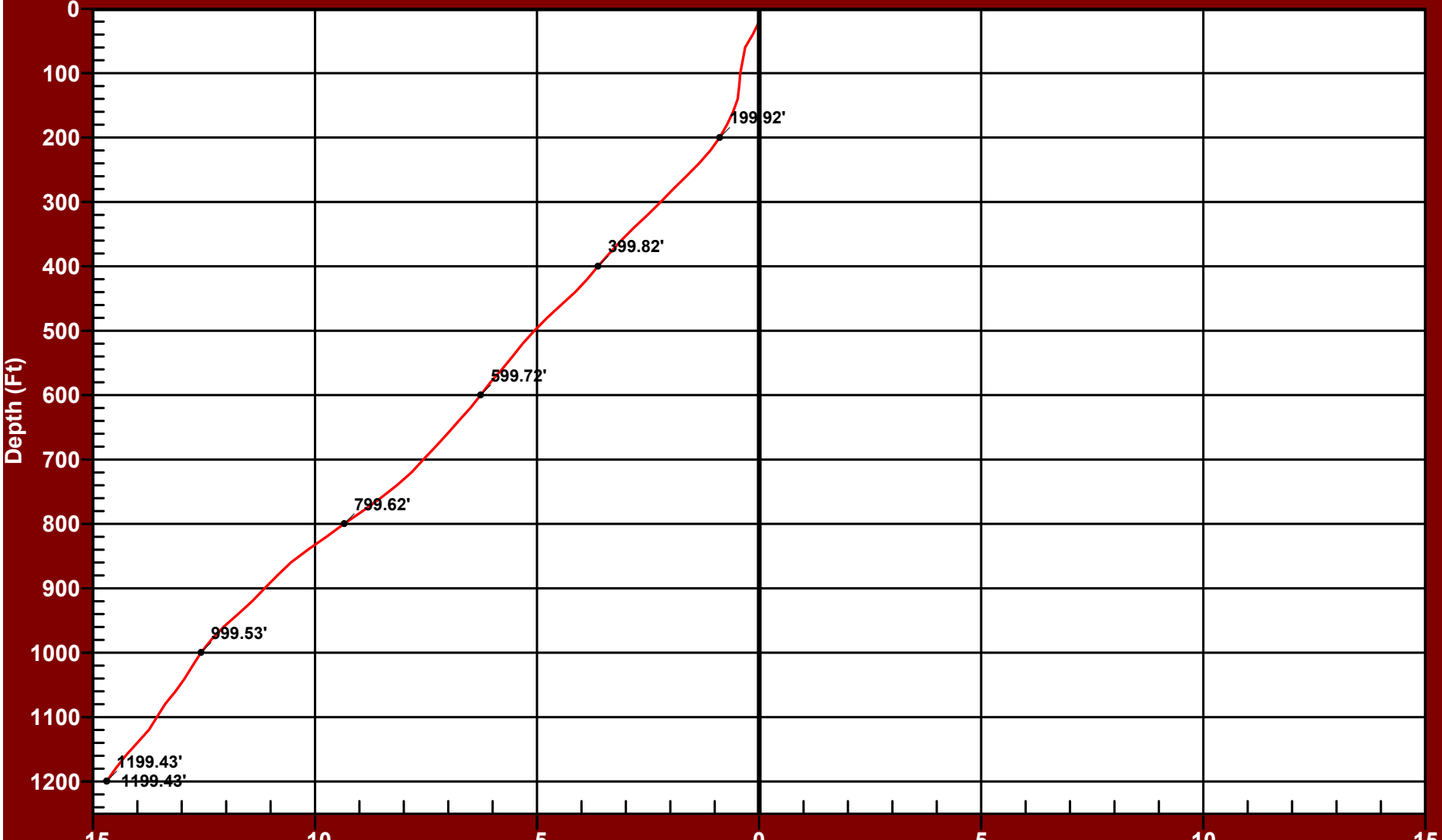
Date of Survey: Monday - February 6, 2017 **Balanced Tangential Calculation Method**

Southwest Exploration Services, LLC (480) 926-4558

EASTING RECTANGULAR VIEW - M54-0

FLORENCE COPPER

Drift Distance = 14.98 Feet Drift Bearing = 258.7 Degrees True Vertical Depth = 1199.43 Feet



Date of Survey: Monday - February 6, 2017

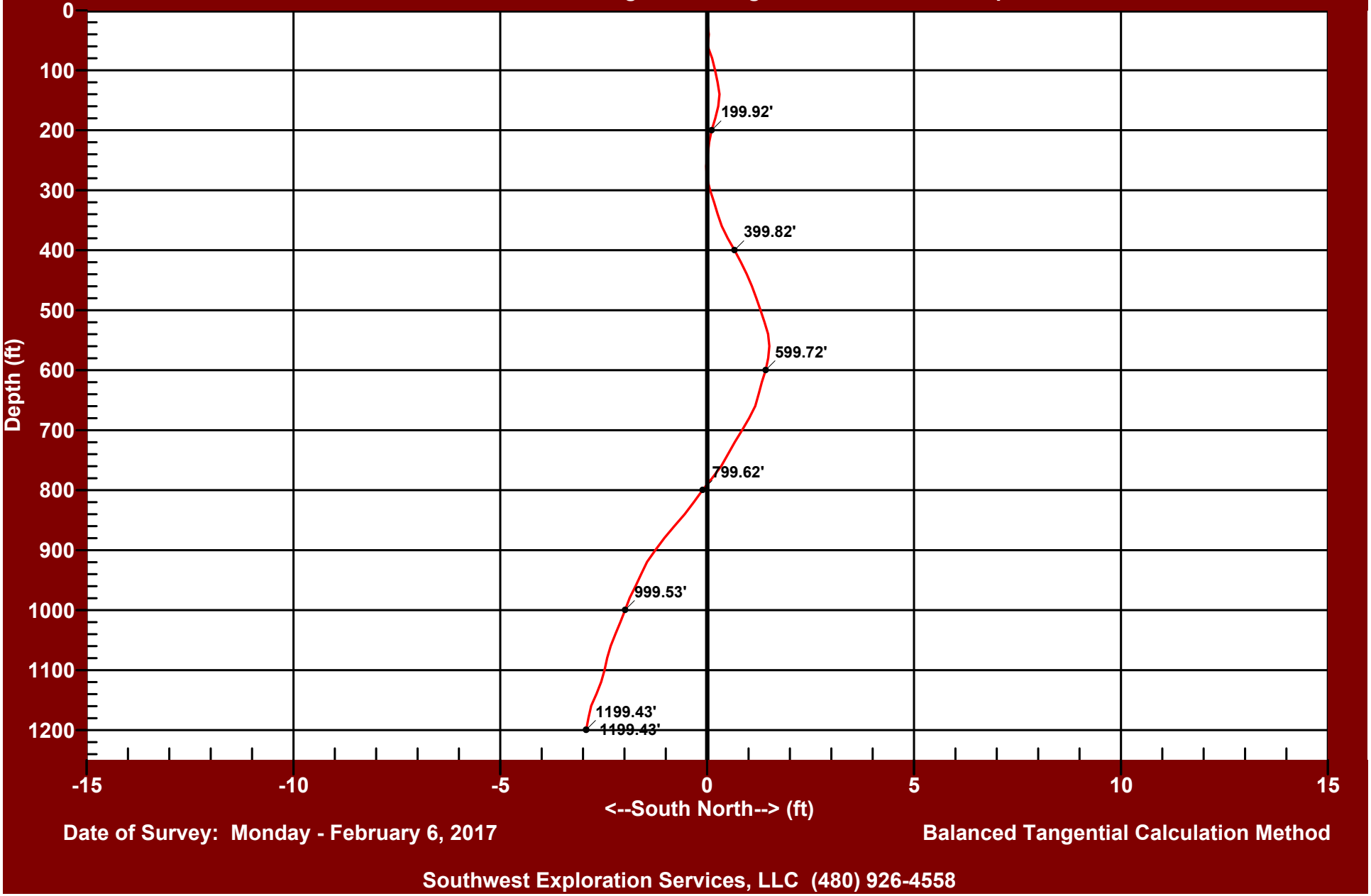
Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

NORTHING RECTANGULAR VIEW - M54-0

FLORENCE COPPER

Drift Distance = 14.98 Feet Drift Bearing = 258.7 Degrees True Vertical Depth = 1199.43 Feet



Date of Survey: Monday - February 6, 2017

Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

APPENDIX C

Lithologic Log

HALEY ALDRICH

LITHOLOGIC LOG

M54-O

Project	Production Test Facility
Client	Florence Copper, Inc.
Contractor	National EWP, Inc.

Cadastral Location: D (4-9) 28 CBD

Drilling Method	Conventional Mud Rotary	Concrete Pad	1480.20 feet, amsl	Start	January 29, 2017
Borehole Diameter(s)	10.625	Datum	State Plane NAD 83	Finish	February 6, 2017
Rig Make & Model	Schramm T685WS	Location	N 746,716 E 847,417	H&A Rep.	C. Price

Elevation (ft)	Depth (ft)	Well Diagram	USCS Symbol	Stratum Change Depth (ft)	LITHOLOGY IDENTIFICATION AND DESCRIPTION	COMMENTS
1480	0		SP		**POORLY GRADED SAND (0-15 feet)** Primarily fine to medium sand to 4 mm with ~5% fines. Sand is subrounded. Fines are nonplastic, have no toughness, are grayish brown, and have no reaction to HCL. **UBFU**	**Well Registry ID:** 55-226798 **Surface Completion:** Locking Well Vault & Concrete Pad **Well casing stickup:** 2.7 feet als
1460	20		SW	15		
1440	40		SP-SM	45	**WELL GRADED SAND with GRAVEL (15-45 feet)** Primarily medium to coarse sand with 5% fines and ~25% gravel to 6 mm. Sand and gravel is subangular. Fines are nonplastic, have no toughness, are reddish brown, and have no reaction to HCL. **UBFU**	**Surface Casing:** 14-inch mild steel; 0 - 40 feet **Well Casing:** Nominal 5-inch diameter Mild Steel; 0 - 668 feet
1420	60					
1400	80				**POORLY GRADED SAND with SILT and GRAVEL (45-120 feet)** Primarily medium to coarse sand with ~5% fines and ~35% gravel to 10 mm. Sand and gravel is subangular. Fines have low plasticity, low toughness, are reddish brown, and have a weak reaction to HCL. **UBFU**	
1380	100					
1360	120		CL	120	**SANDY LEAN CLAY (120-170 feet)** Primarily fines with ~45% sand to 4 mm. Sand is subangular. Fines have medium plasticity, medium dry strength, medium toughness, are reddish brown, and have a weak reaction to HCL. **UBFU**	
1340	140					
1320	160			170		**Unit Intervals:** UBFU: 0 - 286 feet MGFU: 286 - 300 feet LBFU: 300 - 740 feet Oxide: 740 - 1210 feet
1300	180		SW		**WELL GRADED SAND with GRAVEL (170-205 feet)** Primarily medium to coarse sand with ~5% fines and ~25% gravel to 6 mm. Sand and gravel is angular. Fines are nonplastic, have no toughness, are reddish brown, and have a weak reaction to HCL. **UBFU**	
1280	200			205		
1260	220		SW		**WELL GRADED SAND with GRAVEL (205-240 feet)** Primarily medium to coarse sand with ~5% fines and ~25% gravel to 10 mm. Sand and gravel is subangular. Fines are nonplastic, have no toughness, are reddish brown, and a medium strong reaction to HCL. **UBFU**	
1240	240		SP	240	**POORLY GRADED SAND with GRAVEL (240-290 feet)** Primarily medium to coarse sand with ~5% fines and ~40% gravel to 14 mm. Sand and gravel is subrounded. Fines are nonplastic, have no toughness, are reddish brown, and a weak reaction to HCL. **UBFU**	
1220	260					
1200	280			290		
1180	300		CH		**FAT CLAY with SAND (290-315 feet)** Primarily fines with ~20% sands to 2 mm . Sand is subrounded. Fines have high plasticity, high toughness, are reddish brown, and have a medium strong reaction to HCL reaction. **MFGU** Middle fine grained unit confirmed via e-log.	**Seal:** Type V neat cement; 0 - 649 feet Fine Sand & Bentonite; 649 - 658 feet
1160	320		SP	315		
1140	340				**POORLY GRADED SAND with GRAVEL (315-375 feet)** Primarily medium to coarse sand with ~5% fines and ~30% gravel. Sand and gravel is angular. Fines are nonplastic, have no toughness, are reddish brown, and have a strong reaction to HCL. **LBFU**	
1120	360					
1100	380		GP-GM	375	**POORLY GRADED GRAVEL with SILT and SAND (375-425 feet)** Primarily gravel to 10 mm with ~40% sand and ~10% fines. Sand and gravel is angular. Fines have low plasticity, low toughness, are brown, and have a strong reaction to HCL. **LBFU**	
1080	400					
1060	420			425		
1040	440		SC		**CLAYEY SAND with GRAVEL (425-445 feet)** Primarily fine to coarse sand with ~15% percent fines and ~20% gravel to 12 mm. Sand and gravel is subangular. Fines have medium plasticity, low toughness, are brown, and have a strong reaction to HCL. **LBFU**	
1020	460		SP-SM	445		
1000	480				**POORLY GRADED SAND with SILT (445-510 feet)** Primarily fine to medium sand with ~10% fines and ~10% gravel to 6 mm. Sand and gravel is angular. Fines have low plasticity, low toughness, are brown, and have a strong reaction to HCL. **LBFU**	
980	500			510		
960	520		GP-GM		**POORLY GRADED GRAVEL with SILT and SAND (510-580 feet)** Primarily gravel to 10 mm with ~40% sand and ~10% fines. Sand and gravel is angular. Fines have low plasticity, low toughness, are brown, and have a strong reaction to HCL. **LBFU**	
940	540					
920	560					
900	580			580		
	600		SW-SM		**WELL GRADED SAND with SILT and GRAVEL (580-610 feet)** Primarily fine to coarse sand with ~10% fines and ~25% gravel to 14 mm. Sand and gravel is	

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

HALEY ALDRICH

LITHOLOGIC LOG

M54-O

Elevation (ft)	Depth (ft)	Well Diagram	USCS Symbol	Stratum Change Depth (ft)	LITHOLOGY IDENTIFICATION AND DESCRIPTION	COMMENTS
880	600					
			SC	610	angular. Fines have low plasticity, low toughness, are brown, and have a strong reaction to HCL. **LBFU**	
860	620				**CLAYEY SAND (610-685 feet)** Primarily fine to coarse sand with ~20% fines and ~5% gravel to 8 mm. Sand is subangular, gravel is angular. Fines have high plasticity, medium toughness, are brown, and have a strong reaction to HCL. **LBFU**	
840	640					
820	660					**Filter Pack:** 8 - 12 CO Silica Sand; 658 - 1210 feet
800	680			685		**Thread Adapter:** Stainless Steel, SCH 80 F480 PVC to SCH 40 F480 Mild Steel: 668 feet
			SC		**CLAYEY SAND (685-735 feet)** Primarily fine to coarse sand with ~15% fines and ~10% gravel to 10 mm. Sand and gravel is angular. Fines have medium plasticity, medium toughness, are brown, and have a strong reaction to HCL. **LBFU**	**Well Screen:** Nominal 5-inch diameter, SCH 80 PVC Screen (0.020-inch slots); 668 - 1198 feet
780	700					
760	720			735		
740	740		SC		**CLAYEY SAND (735-750 feet)** Primarily fine to coarse sand with ~20% fines and ~5% gravel to 4 mm. Sand and gravel are angular. Fines have medium plasticity, medium toughness, are brown, and have a medium reaction to HCL. **LBFU**	
720	760			750	**QUARTZ MONZONITE (750-855 feet)** Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximatley 5%. Bedrock contact via e-log 745-750. Field lithlog indicates contact at 855.	
700	780					
680	800					
660	820					
640	840			855		
620	860				**DIABASE (855-960 feet)** Dark gray to black igneous rock. Dark grey, fine grained, igneous. Chrysocolla found sparingly throughout. Increase in clay content from 875-940. Reddish brown clay 875-905, dark gray clay 905-940.	
600	880					
580	900					
560	920					
540	940					
520	960			960	**QUARTZ MONZONITE (960-1020 feet)** Mostly feldspar rich granites with diabase mixed in. Trace chrysocolla. Clays increase 970-980, 1005-1020.	
500	980					
480	1000					
460	1020			1020	**DIABASE (1020-1095 feet)** Dark gray to black igneous rock. Trace chrysocolla, clays present throughout.	
440	1040					
420	1060					
400	1080					
380	1100			1095	**QUARTZ MONZONITE (1095-1210 feet)** Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximatley 5%. Reddish brown clay 1120-1190.	
360	1120					
340	1140					
320	1160					
300	1180					
280	1200			1210		**Total Depth:** Driller Depth = 1210 feet; Geophysical Logging Depth = 1210 feet

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

APPENDIX D

Well Completion Forms

PIPE TALLY

Project Name.: Florence Copper	Project No.: 129687-002
Well No.: MS4-C	Date: 2-6-17 to 2-7-17
Location:	Pipe Talley for: Well
Total Depth: 1210	Geologist: K. Ford

Type of Connections: ☐ Welded ☐ T+C ☒ Flush Thread ☐ Other

Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type
1	✓	0.52	0.52	END CAP
2	✓	10.02	10.54	SCREEN
3	✓	20.00	30.54	(PVC)
4	✓	19.99	50.53	
5	✓	20.00	70.53	
6	✓	20.01	90.54	
7	✓	20.00	110.54	
8	✓	19.99	130.53	
9	✓	20.01	150.54	
10	✓	19.99	170.53	
11	✓	19.99	190.52	
12	✓	20.00	210.52	
13	✓	20.00	230.52	
14	✓	20.01	250.53	
15	✓	20.01	270.54	
16	✓	20.01	290.55	
17	✓	20.01	310.56	
18	✓	20.00	330.56	
19	✓	20.01	350.57	
20	✓	20.00	370.57	
21	✓	20.00	390.57	
22	✓	19.99	410.56	
23	✓	19.99	430.55	
24	✓	19.99	450.54	
25	✓	19.99	470.53	
26	✓	20.00	490.53	
27	✓	19.99	510.52	
28	✓	19.98	530.50	
29	✓	1.28	531.78	~~BLANK~~ ADAPTER
30	✓	10.00	541.78	BLANK
31	✓	19.99	561.77	BLANK
32	✓	19.98	581.75	(STEEL)
33	✓	20.01	601.76	
34	✓	20.01	621.77	
35	✓	20.00	641.77	
36	✓	20.00	661.77	
37	✓	19.98	681.75	
38	✓	19.99	701.74	
39	✓	20.01	721.75	
40	✓	20.00	741.75	
41	✓	19.98	761.73	
42	✓	20.00	781.73	
43	✓	20.00	801.73	
44	✓	19.99	821.72	
45	✓	19.99	841.71	
46	✓	20.00	861.71	
47	✓	20.01	881.72	
48	✓	20.00	901.72	
49	✓	20.00	921.72	
50	✓	19.99	941.71	
51	✓	20.00	961.71	
52	✓	19.98	981.69	
53	✓	20.00	1001.69	

SUMMARY OF TALLY

Total Length tallied:	1201.67
Casing Stick-Up:	2.7'
Length of Casing Cut-Off:	0
Bottom of Well:	1198.97
Screened Interval:	1198.97 - 668.47
Total Screen in Hole:	530.50

Notes:

26 × 20 ft screen = 520 ft
1 × 10 ft screen = 10 ft
33 × 20 ft blank = 660 ft
1 × 10 ft blank = 10 ft
1200 ft

Centralizer every 46 ft

HALEY ALDRICH

PIPE TALLY

Project Name.: FLORENCE COPPER	Project No.: 129687-002
Well No.: MS4-0	Date: 2-6-17 to 2-7-17
Location:	Pipe Talley for: WELL
Total Depth: 1210	Geologist: KFORD

Type of Connections: ☐ Welded ☐ T+C ☒ Flush Thread ☐ Other

Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type	Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type
54	✓	20.00	1021.69						
55	✓	19.99	1041.68						
56	✓	19.99	1061.67						
57	✓	20.01	1081.68						
58	✓	20.00	1101.68						
59	✓	19.99	1121.67						
60	✓	20.01	1141.68						
61	✓	20.00	1161.68						
62	✓	20.00	1181.68						
63	✓	19.99	1201.67						

SUMMARY OF TALLY

Total Length tallied:	
Casing Stick-Up:	
Length of Casing Cut-Off:	
Bottom of Well:	
Screened Interval:	
Total Screen in Hole:	

Notes:

HALEY ALDRICH

ESTIMATED ANNULAR MATERIAL RECORD

Project Name: Florence Copper **Project #.:** 129657-002 **Date:** 2-6-17
Well No.: MW4-C **Geologist:** C Price, K Ford

ANNULAR VOLUME CALCULATIONS

Total Depth of Borehole [T]:	1210	feet	Total Cased Depth:	1199	feet
Borehole Diameter [D]:	10.625	inches	Rat Hole Volume [R=(D²) 0.005454*L_r]:	6.16	Ft³
Screen Length [L_s]:		feet	Rat Hole Length [L_r]	10	feet
Screen Diameter [d_s]:	5.56	inches	Camera Tube Length [L_{ct}]	—	feet
Casing Length [L_c]		feet	Camera Tube Diameter [d_{ct}]	—	inches
Casing Diameter [d_c]	5.56	inches			

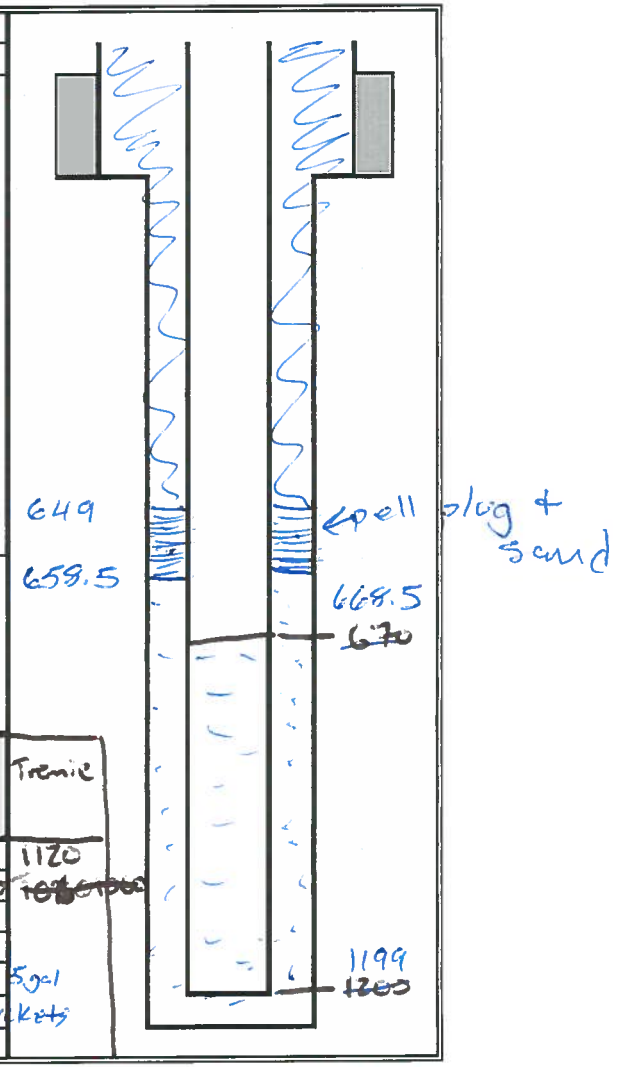
Screen Annular Volume (A_s): (D^2-d_s^2) 0.005454 = 0.45 Ft³/Lin. Ft
Casing Annular Volume (A_c): (D^2-d_c^2) 0.005454 = 0.45 Ft³/Lin. Ft
Casing/Cam.Tube Annular Volume (A_{c+ct}): (D^2-d_c^2-d_{ct}^2) 0.005454 = — Ft³/Lin. Ft

EQUATIONS

2,700 lbs. Silica Sand = 1 cubic yard = 27 cubic feet
[1] Volume of bag (Ft^3) = bag weight/100
[2] Calculated depth = Previous Calculated depth - (v/A)

Bentonite Sack = 0.69 ft³
Silica Sand Super Sack = 3000 lbs.

No.	✓	Weight of Bag (lbs.)	Volume of Bag[1] (v) (ft³)	Total Vol. of Bags (ft³)	Calculated Depth[2] (ft bls)	Tagged Depth (ft bls)	Comments
1	✓	3000	30	30	1147	1150	~~tremie~~ 8×12 silica
2	✓	"	"	60	1083	1035	sand ~~1210~~ ~~tremied~~
3		"	"	90	968	-	
4		"	"	120	701		
						658.5	tot. 7 super sacks + 14 5gal
						649	pell plug + sand buckets
							10.5 yards cement



Pell plug = 7 buckets of pell plug w/3 bags #60 silver sand

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: Florence Copper	Project No.: 129657-002
Well No.: AI54-C	Date: 2-10-17 –
Location:	Measuring Point: —
Total Depth of Well (ft bls): ~~1199~~ 1199	Screen Interval (ft bls): ~~630-309.53~~ 1199 - 665.5
Pump Type/Setting (ft bls): airlift	Activity: Airlift / mud evacuation
How Q Measured: Volume of water truck pump times	H&A Personnel: C Price

Time	~~Discharge (gpm)~~ Tot Gal	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
1450								Installing tremie to
1521		~~pump~~ air to	on, 400'	bothing @	200',	leaving		200'
2-10-17 1556								air on
1559					8.00	127	25.9	muddy,
1559		bad seal	@ well	head,	air off +	working	on it.	
1605	≈11.4							air on, 4.2 gpm avg
1635		≈220 gal						air off,
1711			~~Pump~~ air	air on,	tremie @			600' btoc
		air ~~Pump~~ not good.	off	2 min later, ≈250 gal	seal @ well head surged.			
2-11-17		Start	2-11-17		Crew modifying			equipment.
0820					air on			tremie @ 600'
0825					air off			~200 gal.
0844								air on
0859		still drill	mud,	~1100 gal,	1.5 sand	ppm		air off
0930								tremie @ 800'
1100		couldn't get flow, bringing tremie to						700'
1125	no	flow, pulling up to 640'						
1130								air on,
1139								flow starts
1141				0.4	dark brown			mud,
1148	2200			0.4	brown			air off
1247								air on @ 680'
1250				0.8	dark brown			Flow starts
1300	~2900			0.5	brown			air off
		Dropping tremie to		720'				

Comments:
Catchment bin 3.7' x 7.7' Water truck cap - 2200 gal
0.8' deep @ 1620 = 22.8 ft³ = 170 gal end of day1 ≈ 12%

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: # FCI	Project No.: 129657-002
Well No.: MW4-0	Date: 2-11-17 to
Location:	Measuring Point: —
Total Depth of Well (ft bls): 1199	Screen Interval (ft bls): 1199-668.5
Pump Type/Setting (ft bls): airlift	Activity: Airlift
How Q Measured:	H&A Personnel: C Price

Time	~~Discharge~~ (gpm) Total gal	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
2-11-17								
1312								air on @ 720'
1332								no flow, air off
								pulling pump to 720'
1342								air on,
1357								no flow, air off
								pulling back to 650'
1404								air on,
1421				0.2	dark brown			flow start
1421	4400			0.4	drilling mud,			air off flow st
1454								air on
1456				0.2	dark brown	mud		flow
1501				0.2	brown			
1506				0.2	brown			
1511				0.2	brown			
1518	6600			0.1	brown			air off
1518	≈ 100 gpm			0.1	6.85	175	27.3	
1550					~~7.67~~	~~899~~		air on, flow
1551				<0.1	7.67	899	27.9	dark brown
1556				<0.1	7.80	1145	27.1	brown
1601				<0.1	7.81	1119	27.3	light brown
1606				<0.1	7.84	887	27.2	light brown
1610	8800			<0.1	7.84	894	27.6	light brown off
1640				<0.1	7.70	867	27.7	brown on
1645				0.0	7.85	845	27.0	light brown
1650				<0.1	7.86	863	27.1	brown
1655				<0.1	7.84	871	27.1	light brown
1700				0.0	7.89	868	27.1	light brown
1705	11000 gal	≈ 90 gal						off

Comments:
@ 14:30, plan to finish development w/ airlift @ 650'
then install pump tomorrow

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FLI	Project No.: 129657-002
Well No.: MW-1	Date: 2-11-17
Location:	Measuring Point: —
Total Depth of Well (ft bls): 1199	Screen Interval (ft bls): 1199-665.5
Pump Type/Setting (ft bls): airlift	Activity: Air lift
How Q Measured:	H&A Personnel: C Price

Time	~~Discharge (gpm)~~ Total gal	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments @ 680'
2-11-17 1129				0	7.83	846	27.2	brown on
1139				0	~~7.86~~	~~848~~	~~24.1~~	light brown
1139				0	7.89	856	26.9	light brown in
1150	13,200			0	7.88	854	26.6	"
								pump off
1-12-17 0640								air on
0642				0	~~7.44~~	3749	24.7	brown
0652					7.78	1734	26.1	533 NTU, light brwn turbi
0659					7.90	1670	26.2	373 NTU
0700	15400							air off

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129667-002
Well No.: MW54-C	Date: 2-16-17
Location:	Measuring Point: TOC, 2.2' a/s
Total Depth of Well (ft bls): 1199	Screen Interval (ft bls): 1199 - 665.5
Pump Type/Setting (ft bls): 960', Grundfos 16330-34	Activity: Development
How Q Measured: Stopwatch / 5gal bucket	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
0904	20		194	<0.1	7.14	965	26.9	Pump on @ 0845
0916	20	236.68	68.9	<0.1	7.85	904	26.6	
0925	20	237.20	62.0	<0.1	7.89	859	27.0	
0936	20	237.48	69.9	<0.1	7.91	893	26.8	
0945	20	237.71	55.7	0	7.91	890	26.9	
1000	20	237.94	45.9	0	7.91	887	26.7	
1015	20	238.10	47.0	0	7.88	871	27.0	
1030	20	238.34	39.6	0	7.90	771	27.3	
1045	20	236.44	40.6	0	7.91	864	27.1	
1100	20	236.51	29.3	0	7.92	858	27.0	
1115	20	236.82	28.8	0	7.91	856	27.4	
1130	20	238.94	28.1	0	7.90	866	27.5	
1145	20	238.98	23.6	0	7.94	855	26.6	
1200	20	239.17	23.9	0	7.90	857	27.5	
1215	20	239.24	21.8	0	7.91	858	27.6	27.6
1230	20	239.37	20.7	0	7.87	849	27.6	
1245	20	239.44	20.0	0	7.85	855	27.5	
1300	20	239.55	19.1	0	7.87	841	27.7	
1315	20	239.59	17.5	0	7.85	856	27.8	
1405	20	239.81	16.6	0	7.92	853	27.5	pump off
1407	—	232.09						
1410	—	231.14						
1412		230.52						
1415		230.14						pump on
1417 1420	20	236.51	16.3	0	7.86	845	27.3	
1422	20	238.54	18.6	0	7.89	844	27.6	
1430	20	239.18	20.4	0	7.86	850	27.5	
1445		239.52	19.1	0	7.85	844	27.4	

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129687-002
Well No.: MW-0	Date: 2-16-17
Location:	Measuring Point: TOC - 2.2' bls
Total Depth of Well (ft bls): 1199	Screen Interval (ft bls): 1199 - 668.5
Pump Type/Setting (ft bls): Grundfos 16330-04	Activity: Development
How Q Measured:	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	~~Specific Capacity (gpm/ft)~~ Turbidity	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
1500	20	239.76	18.4	0	7.69	845	27.6	
1507	0	239.64						Pump off
								lowering to
								1180.
1617	20	240.06	18.4	0	7.81	843	27.8	on @ ~1515, still @ 960'
1625	20	240.09	19.1	0	7.76	845	27.6	
1640	20	240.11	13.9	0	7.67	846	27.6	
~~1700~~								
1705								Pump off
								getting prepped to
								lower pipe/pump

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FLI	Project No.: 129657-002
Well No.: M54-0	Date: 2-17-17
Location:	Measuring Point: TOC, 2.2' a/s
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls):
Pump Type/Setting (ft bls): Grundfos, 1184'	Activity: Development
How Q Measured: stopwatch/5 gal buckets	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Turbidity NTU	Comments
0715		225.94							
0717									pump on
0719	20	232.96		<0.1	6.48	841	21.4	180	clear/cloudy
0721	20	234.04		0.2	7.61	1240	28.3	—	dark brown, muddy
0725	20	234.96		<0.1	7.76	990	27.9	—	light brown
0731	20	235.89		<0.1	7.70	870	27.8	298	cloudy brown
0740	20	236.48		0	7.78	877	26.9	276	cloudy
0750	20	237.04		0	7.82	857	26.8	444	cloudy
0800	20	237.23		0	7.54	850	26.6	78.5	slightly cloudy
0810	20	237.44		0	7.85	843	26.7	41.3	"
0820	20	237.64		0	7.54	842	26.7	136	"
0840	20	237.90		0	7.86	845	27.1	63.3	clear
0900	20	238.14		0	7.52	842	26.9	46.2	clear
0920	20	238.34		0	7.85	844	27.5	63.2	clear
0940	20	238.51		0	7.86	840	27.0	54.8	
1000	20	238.68		0	7.88	840	26.7	51.6	pump off
1014		229.12							pump on
1015	20	234.56		0	7.86	845	26.9	374.3	clear
1020	20	236.91		0	7.86	842	27.6	24.6	clear
1026	20	237.88		0	7.86	842	27.2	20.8	clear
1040	20	238.35		0	7.87	839	27.3	9.19	clear
1050	20	238.61		0	7.86	844	27.7	15.6	clear
1100	20	238.72		0	7.87	840	27.7	19.6	clear, pump off
1110	20	229.59							pump on
1112	20	236.14		0	7.87	834	26.6	12.7	clear
1115	20	236.98		0	7.87	835	27.6	15.3	clear
1120	20	237.84		0	7.86	840	27.6	15.3	
1130	20	238.39		0	7.84	846	26.7	38.3	
					7.85	844	27.1		

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129857-002
Well No.: N54-0	Date: 2-17-17
Location:	Measuring Point: TOC 2.2' a/s
Total Depth of Well (ft bls): 1199	Screen Interval (ft bls): 1199 - 665.5
Pump Type/Setting (ft bls): Grundfos, 1184'	Activity: Development
How Q Measured: stopwatch / 5 gal bucket	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
1140	20	238.64		0	7.86	836	27.3	10.4
1200	20	238.92		0	7.87	839	27.7	7.66
1210	20	238.99		0	7.85	835	27.6	10.2
1220	20	239.09		0	7.86	837	27.6	10.9
1230	20	239.11		0	7.88	838	27.4	10.2
1231								pump off, end development

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FLI	Project No.: 129687-002
Well No.: MW4-0	Date: 5-9-17
Location:	Measuring Point:
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 1200 - 670
Pump Type/Setting (ft bls): 12 Airlift	Activity: Airlift
How Q Measured: Estimates	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
1017								Air on, 600'.
1045								return starting
1048	~70			4.0 black				Black
1023	~70			1.0 black				Dark black/brown
1028	~70			0.4 light brown				Brown, drilling mud.
1045	~70			<0.1				Brown, drilling mud
1105	~70			0				light brown, Drill fluid
1120								air off, crew needs
								to tighten hoses.
1130								Air on.
1134	~70			0				light brown.
1145	~70			0				light brown
1155	~70			0				light brown
								air off, going to
								900'.
1238								900', w/ 1.5+ slugs
								@ 420' & 720'
1252		No return, going down to 1000'.						
1313								air on @ 1000'.
1340								no lift.
1410								Air on @ 800'
1430								No return pulling
								to 700'
1445								Air on @ 700'.
1448	~70			0.2 black				Return, dark brown/black
1455	~70			0				light brown
1505	~70			0				light brown
								air off, going to 800'

Comments:
11:49 depth = 0.6' } ~70 gpm.
11:51 depth = 1.3' }

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCF	Project No.: 129687-002
Well No.: MS4-C	Date: 5-9-17
Location:	Measuring Point:
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 1200-670
Pump Type/Setting (ft bls): Airlift	Activity: Airlift
How Q Measured:	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
1551								air on @ 800'
1605								no return, air off
1805		259.59						grabbing water lvl
5-10-17								
		Bailing, 1 bailer = ≈ 2.5 gal						
0700								Bail count: 111
		#1 light brown, no sand						
				0.2				#2, dark gray/black
				0.1				#3, dark gray/black
0800								Going to airlift from >700'
0925								Tremie @ >700'
0926								Air on,
0930	~60			0.8				Dark gray/black
0936								air off, compressor issue,
0946								air on,
0948	~60			0.2				black
0949								air off
1007								air on, >740'
1020								No return, going to >720'
1030								air on @ >720'
1045								no lift.
5-11-17								
1555								Air on, @ 800'
1557	~80			1.5				Brown
1605	~80			0.3				Brown
1610	~80							light brown

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: 129687-002	Project No.: FCI
Well No.: MS4-0	Date: 5-11-17
Location:	Measuring Point:
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 1200-670
Pump Type/Setting (ft bls): Airlift	Activity: Airlift
How Q Measured:	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments
1620	~80			0.1				light brown
1630	~80			0				very cloudy,
1635	~80			0				cloudy
1636								air OFF, going to 900'.
1715								Air on, @ 900'
1717	~80			<0.1				cloudy
1722	~80			0.2				brown,
1730	~80			0.1				brown
1743	~80			0.3				light brown.
1745	"							air OFF
7:45	~40			0.5				reddish brown, very cloudy
8:15	~40	@ ~~1180~~		0.2				air on at 1180'
8:45	~40			0.3				cloudy
9:15	~40			0.1				light brown
9:45	~40			0.2				cloudy
10:15	~40			<0.1				light brown
11:00								stopped air lifting to install pump

5/12/17

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: 129687-002	Project No.: FCI
Well No.: MS4-0	Date: 5/12/17
Location:	Measuring Point: HPS TOM 2.25' abs
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 1200-670
Pump Type/Setting (ft bls): Grundfos 1195'?	Activity: Development
How Q Measured: Stop watch, 5 gal bucket	H&A Personnel: R. Moore

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	NTU
16:00	17							Pump on, surface flow	
16:22	17	263.82		0.3	6.61	781	30.6	cloudy / brown	164
16:30	17	264.19		0.3	6.74	822	28.8	cloudy / brown	103
16:34	17	264.30		<0.1	7.11	805.8	28.5	cloudy / brown	106
16:38	17	264.38		0.1	7.34	815	28.6	cloudy / brown	152
16:41	17	264.47		0.1	7.44	810	28.4	cloudy	64.2
17:00	17	264.75		<0.1	7.68	813	28.5	cloudy	29.7
17:19	17	264.91		<0.1	7.71	804	28.3	cloudy	21.4
17:30	17	264.92		0.1	7.76	814	28.3	cloudy	27.9
17:43								pump off	
5/13/17 08:43								pump on	
08:58	17	261.54		0.2	6.36	833	30.4	reddish brown/cloudy	213
09:06	17	261.93		0.1	6.96	810	29.5	light brown/cloudy	81.3
09:45	17	262.19		0.1	7.73	805	28.9	cloudy	10.8
10:22	17	263.21		0.1	7.84	807	28.6	cloudy	7.33
10:53	17	263.44		<0.1	7.88	805	28.3	cloudy	6.88
11:41	17	263.72		<0.1	7.89	806	28.7	cloudy	6.72
12:10	17	263.83		<0.1	7.88	804	28.9	cloudy	6.57
13:19	17	264.11		0	7.91	804	28.6	clear	7.02
14:03	17	264.25		0	7.89	811	28.9	clear	6.13
15:40	17	264.39		0	7.98	816	28.8	clear	6.79
16:10								pump off	
17:00	17	256.35		<0.1	7.97	804	27.7	pump on, clear	9.36
17:03	17	261.63		0	7.93	799	27.7	clear	9.99
17:05								pump off	
17:20	17	256.35		<0.1	8.10	808	27.9	pump on, cloudy	24.7
17:24	17	261.32		0	8.01	803	27.7	cloudy	15.7
17:40	17	263.24		0	7.91	805	28.4	cloudy	15.0
17:42								pump off	

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FLI	Project No.: 129687-002
Well No.: M 54-0	Date: 5/14/17
Location:	Measuring Point: TOM 2.25' ags
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 1200 - 670'
Pump Type/Setting (ft bls): GrundFos, 1195	Activity: Development
How Q Measured: Stop watch, 5 gal bucket	H&A Personnel: R. Moore

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	NTU
0903	17	253.81		0.1	6.86	802	23.7	Pump on, cloudy	31.7
0912	17	260.31		0.1	7.33	796	29.4	Light brown, cloudy	116 3
0916	17	260.72		0.1	7.59	775	29.3	light brn, cloudy	89.4
0925	17	261.32		0.1	7.82	795	28.5	light brn, cloudy	70.3
10:04	17	262.19		0	8.13	802	28.1	clear	5.92
10:05								pump off	
11:05	17	248.21						pump on	
11:11	17	259.15		0	8.27	803	28.8	~~cloudy~~ clear	7.07
11:14	17	260.30		<0.1	8.23	804	28.5	cloudy	33.1
11:20	17	261.10		0	8.22	805	28.5	clear	9.96
11:23	17	261.32		0	8.23	804	28.8	clear	8.83
11:24								pump off	
12:15	17	254.24						pump on	
12:26	17	261.11		<0.1	8.35	811	29.0	cloudy	22.7
12:34	17	261.69		<0.1	8.22	803	28.9	clear	10.0
12:40	17	261.72		0	8.22	803	28.5	clear	7.37
12:42								pump off	
13:25	17	254.61		0	8.27	803	27.2	pump on, clear	10.1
13:25	17	261.12		0	8.26	803	28.5	clear	12.1
13:35	17	261.93		0	8.24	803	28.2	clear	6.49
13:36								pump off	
15:05	17	260.10		0	8.42	804	24.6	pump on, clear	6.51
15:10	17	260.54		<0.1	8.26	807	28.8	clear	16.8
15:22	17	261.45		0	8.28	801	28.5	clear	5.74
15:24								pump off	
15:48	17	245.53		0	8.33	801	26.5	pump on, clear	5.52
16:00	17	261.38		<0.1	8.28	812	28.4	clear	~~15.5~~
16:06	17	261.57		0	8.30	800	28.0	clear	~~15.6~~ 8.93
16:09								pump off	

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: ELI	Project No.: 129687-002
Well No.: MW-O	Date: 5/14/17
Location:	Measuring Point: TOM 2.25' AGS
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 1200-670
Pump Type/Setting (ft bls) GrundFos, 1195'	Activity: Development
How Q Measured:	H&A Personnel: R. Moore & L Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	NTU
16:45	17	254.39		60.1	8.35	797	26.2	pump on, clear	11.5
16:57	17	261.35		0	8.30	804	28.1	clear	10.16
17:00	17	261.54		0	8.30	802	28.1	clear	7.90
17:03								pump off	
17:20	17	254.76		0	8.33	799	26.5	pump on, clear	6.42
17:26	17	260.93		0	8.30	799	28.2	clear	11.6
17:28	17	261.39		0	8.33	801	27.2	clear	6.34
17:32	17	261.62		0	8.32	803	28.4	clear	8.38
17:35								pump off	
5-15 17 0621		255.55						pump on	
0623	17	258.86		0	6.91	790	22.8	clear	7.32
0625	17	259.68		0	7.08	802	26.6	cloudy, brownish	47.7
0630	17	260.48		0	7.32	770	28.7	cloudy	39.2
0640	17	261.11		0	7.73	793	28.7	clear	19.2
0651	17	261.56		0	8.00	777	27.8	clear	13.1
0701	17	261.81		0	8.05	795	28.0	clear	4.16
0705	17							pump ~~off~~	
0749	17	253.98						pump on	
0751	17	259.62		0	8.18	803	25.9	clear	3.14
0753	17	260.31		0	8.16	4798	28.6	clear	7.42
0757	17	260.59		0	8.16	800	28.7	clear	5.77
0808	17	261.56		0	8.18	805	26.6	clear	5.24
0825	17			0	8.22	804	28.1	clear	5.02
0845	17	262.33		0	8.22	805	28.1	clear	4.07
1015	17	253.97						pump on	
1017	17	259.20		0	8.35	805	27.1	clear	2.16
1019	17	260.08		0	8.30	810	27.6	clear	8.11

Comments:
Pump ~~OFF~~ from 08:47 - 1015

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129687-002
Well No.: M54-0	Date: 5-15-17
Location:	Measuring Point: TOC, 2.25' a/s
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 1200 - 670
Pump Type/Setting (ft bls): GrundFos, 1195	Activity: Development
How Q Measured:	H&A Personnel: C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Comments	NTU
1026	17	261.12		0	8.27	803	28.7	clear	8.11
1035	17	261.57		0	8.27	812	28.5	clear	2.77
1045	17	262.01		0	8.26	809	28.5	clear	3.08
1047								pump off	
								End	

Comments:

HALEY ALDRICH